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STATE AND MUNICIPAL NOISE CONTROL ACTIVITIES, 1973-1974

Environmental Protection Agency
Washington, D. C.

January 1976

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Presented is an assessment of 1973-1974 State and municipal environment noise control efforts based on an EPA survey of States and municipalities with population greater than 75,000. This assessment is designed to provide an overall perspective of the composition and scope of noise control efforts. Areas covered are: organization and orientation of noise control efforts, enforcement, budgetary data, personnel, equipment, program problems and application of technical assistance.

The survey results have been used by EPA/ONAC as a guide in the present technical assistance program. This document has been perpared primarily as a planning and reference guide for public administrators and other officials engaged in the development and implementation of environmental noise control programs.

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January 1976

U. S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF NOISE ABATEMENT AND CONTROL
Washington, D. C. 20460

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FOREWORD

Under the Noise Control Act of 1972, States and municipalities retain primary responsibility for noise control. The Act authorizes the Environmental Protection Agency (EPA) to provide technical assistance to States and municipalities to facilitate development and implementation of their environmental noise control programs. To assure that the EPA technical assistance program is responsive to changing State and municipal requirements, EPA periodically assesses the status of State and municipal noise control efforts.

The results of the initial EPA assessment were summarized in the 1972 *Report to the President and Congress on Noise*[1] and treated in greater depth in the EPA publication entitled *State and Municipal Non-Occupational Noise Programs.*[2] This assessment of State and municipal 1971 noise control efforts was based on information obtained from 41 States and territories and 114 municipalities with populations over 100,000. The overall finding was that States and municipalities were only beginning to deal with noise in 1971, and, with few exceptions, were in the exploratory stages of developing a noise control program. The 1971 survey was part of a comprehensive EPA study of noise and its effects which documented the need for Federal noise control legislation.

This report presents an assessment of the status of State and municipal environment noise control efforts in 1973. It is based on the results of an EPA survey conducted in early 1974 in which information was requested from 55 States and territories and 235 incorporated municipalities with populations greater than 75,000. The survey results have been used by EPA as a guide in the development of the present EPA technical assistance program. This document has also been prepared as a planning and reference guide for public administrators and other officials engaged in the development and implementation of environmental noise control program.

Using the results of the 1974 survey as a baseline, EPA plans to undertake more comprehensive assessments of State and municipal noise control programs in the future. EPA has a continuing need for information on the mechanisms, structures, and resources that have been developed by States and municipalities if an integrated, nationwide noise control program involving a coordinated approach by the varying levels of government is to be developed.

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[1] *Report to the President and Congress on Noise*, Senate 92-63 (February 1972).

[2] *State and Municipal Non-Occupational Noise Programs*, NTID 300.8 (December 1971).

CHAPTER 1

INTRODUCTION

Presented are the results of an EPA survey of State and municipal environmental noise control activities. It provides an assessment of the 1973 status of State and municipal noise control efforts based on the survey data. Current information on the EPA technical assistance program, authorized by Section 14(2) of the Noise Control Act, is also included.

SURVEY OBJECTIVES

The purposes of this EPA study were to:

1. Identify the requirements of State and municipal governments to establish and operate noise control programs,
2. Gather information on State and municipal noise control approaches and disseminate the results to those involved in developing a noise control program,
3. Provide information necessary for the development of an EPA technical assistance program responsive to identified State and municipal needs,
4. Gather data for use in EPA regulator activities,
5. Evaluate developments since the 1971 survey conducted in support of the *Report to the President and Congress on Noise,*
6. Develop baseline data from which the status and progress of State and municipal noise control efforts may be assessed in future years, and
7. Field test the questionnaire developed to gather data and evaluate its usefulness in soliciting needed information.

SURVEY METHODOLOGY

The survey, conducted in early 1974, was directed to the 50 States, three U.S. territories, the Commonwealth of Puerto Rico, the District of Columbia, and 235 incorporated municipalities with populations equal to or greater than 75,000. The official 1970 census was used to determine which municipalities met the population criteria. A high population cutoff was included (1) as noise problems are often a function of urbanization and population density, and (2) to keep the sample size within reasonable bounds for in-depth analysis. The requests for information were disseminated through the ten EPA regional offices. Followup contacts were made to stimulate the greatest possible number of responses.

Survey Coverage

Table 1 provides a breakdown of the survey respondents and the population covered by the States and municipalities that submitted information. A total of 229 questionnaires were received from the 290 mailed. This constitutes an overall survey response rate of 79 percent. The percentage responding was considerably higher for the States and for those municipalities with populations above 149,000. Eighty-nine percent of the U.S. population was represented by the State survey respondents. Over 55 million persons were covered in the municipal responses. The high survey response rate provides a relatively comprehensive and nationwide information base. However, as the survey sample did not include either county governments nor municipalities with populations less than 75,000, many of which have implemented noise control programs, the results do not reflect the totality of environmental noise control activities.

Survey Format

The request for information developed by EPA consisted of a cover letter explaining the purpose of the survey, a questionnaire, and explanatory instructions. Copies of these are contained in Appendix A. Although the questionnaire incorporated requests for specifc types of data, the format provided sufficient latitude to allow States and municipalities to properly characterize their noise control activities. Additionally, respondents were encouraged to elaborate upon any particular aspect of their noise control efforts. The questionnaire consisted of seven broad areas designed to provide an overall perspective of the composition and scope of noise control efforts. These seven areas are:

1. *Organization and Orientation of Noise Control Efforts* – States and municipalities were requested to (1) indicate the title of the organizational unit responsible for the program, (2) list the name, title, address and telephone number of the official directing noise activities, and (3) describe the orientation of program effort. The first question in this area provides data on program structure and delegation of authority. The second identifies a contact for future EPA technical assistance activities. The third solicits information on both the objectives and elements (e.g., public education, development of legislation) of State and municipal efforts. Together, they allow a delineation of the noise control approaches adopted by States and municipalities against which activities and resources described in other questionnaire areas may be assessed.

TABLE I
BREAKDOWN OF SURVEY RESPONDENTS

Survey categories	Total number surveyed	Number of respondents	Percent responding	Total population surveyed[a] (1,000's)	Population covered by respondents[a] (1,000's)	Percent of population covered by respondents
States	50	[b]43	86	202,455	180,467	89
Territories and District of Columbia, Puerto Rico	5	[c]3	60	3,643	3,531	97
Municipalities	235	183	78	62,568	55,632	89
Municipal population[a] breakdown:						
75,000 – 149,000	144	[d]105	73	14,499	[d]10,601	73
150,000 – 249,000	35	29	83	6,356	5,232	82
250,000 – 499,000	31	[e]25	81	10,712	[e]8,949	84
Over 500,000	25	[f]24	96	31,001	[f]30,850	99
TOTAL	290	229	79			

[a] Based on 1970 Census.

[b] The seven States which did not respond were Alaska, Minnesota, Missouri, North Dakota, Texas, Utah, and Wyoming.

[c] District of Columbia, Puerto Rico, Virgin Islands.

[d] Includes Reno, Nev. (population – 73,000) which submitted a questionnaire although not part of the survey sample.

[e] Includes response submitted by Hillsboro County, Fla. (population – 490,265) in place of Tampa, Fla. (population – 278,000).

[f] Includes responses by two county governments: Nassau County, N.Y. (population – 1,428,000) and Allegheny County Pa. (population – 1,605,000) in place of Pittsburgh (population – 520,000). The two municipalities in this category which did not respond were San Francisco and Philadelphia.

2. *Enforcement* – This area includes three elements: (1) designation of the organization responsible for enforcement activities; (2) types and number of enforcement actions instituted in 1973; and (3) enforcement problem areas. Responses in this area provide data on the number of States and municipalities involved in enforcement, the organization and coordination of enforcement efforts with other program elements, and the level of enforcement activity. Additionally, the most significant noise problem sources at the State and municipal level are identified through information on the classes of noise sources most frequently in violation of statutory provisions.

3. *Budgetary Data* – States and municipalities were asked to submit a functional breakdown of budget allocations specifically designated for noise control. These included projected outlays for 1974 and 1975 as well as 1973 expenditures. A format was incorporated showing both manhours spent or projected as well as overall program costs. The amount of funds allocated provides information on the level of noise control activity and the relative priority assigned such efforts. Projected budget figures when compared to the 1973 base indicate future plans and expansion trends.

4. *Personnel* – Information was requested on the job titles of 1973 personnel affiliated with noise control activities. States and municipalities were also asked to identify projected personnel levels and titles for 1974 and 1975.

5. *Equipment* – Specific details were requested on the types, functions, and quantity of noise measurement and analysis equipment available for noise program use. Data on both 1973 instrumentation and planned equipment acquisitions for 1974 and 1975 were solicited.

6. *Program Problems* – States and municipalities were asked to identify major unresolved problem areas which limit the effectiveness of their noise control efforts. Responses in this area indicate the requirements of States and municipalities, resources constraints, and program elements where improvement is necessary.

7. *Application of Technical Assistance* – The EPA technical assistance role under the Noise Control Act was explained in the questionnaire instructions. State and municipalities were requested to identify areas where technical assistance was needed. This question was designed to obtain State and municipal input for the development of a technical assistance program which provides the maximum benefits from EPA's limited authority and resources.

In addition to these specific areas, States and municipalities were asked to enclose copies of their noise ordinances and legislation, enforcement procedures manual, and any other relevant documentation. The types and provisions of State and municipal noise legislation were necessary to place reported activities in the proper context.

SURVEY LIMITATIONS

The following overall survey limitations have been identified and should be considered in interpretation of survey results.

1. In some cases the questionnaire resulted in differing interpretations by States and municipalities of what information was requested. This was due to the subjective nature and lack of specificity of the questionnaire.

2. In several instances, respondents failed to adequately qualify submitted information thereby requiring interpretive judgements. In other cases, there were contradictions and inconsistencies within individual responses. Frequently, States and municipalities did not address each questionnaire area. In some instances, information was not provided on a specific activity (e.g., enforcement) or resource area (e.g., budget) even though the overall response indicated that these were present.

3. Within strict constraints, comparisons have been drawn between the 1971 and 1974 survey results. The two surveys differ significantly in sample size, percentage of responses received, information requested, and evaluation techniques. Therefore, only changes in overall trends and conclusions have been identified between the two surveys.

In addition to these general limitations, there were others which are applicable to specific questionnaire areas. These have been clearly identified in the appropriate report chapters.

REPORT ORGANIZATION AND APPROACH

Chapter 2 summarizes the most significant findings of the survey. Each of the remaining eight chapters provides an in-depth treatment of the results of one or more areas of the survey questionnaire. Chapters 3 through 5 define the mechanisms, structures, and approaches which have been developed by States and municipalities to deal with noise control problems. Chapters 6 through 9 describe the constituent resource and activity elements necessary for an effective program. Chapter 10 summarizes the needs of State and municipal governments to develop noise control programs and indicates how the current EPA technical assistance program addresses these requirements.

Chapters 3 through 10 each follow the same overall organization. To the extent appropriate to the survey area under consideration, the following approach has been used:

1. Discussion of the significance of the particular program aspect or activity to the conduct of an effective noise control program.

2. Identification of the data limitations associated with the survey area.

3. Presentation of the survey results. Summary tables based on a compilation of the individual State and municipal responses are used and trends and relationships discussed. Throughout the report, the responses of Puerto Rico, the Virgin Islands, and the District of Columbia are incorporated in the State totals and descriptions.

4. Treatment of noteworthy programs. Individual State and municipal activities which are characterized by comprehensive or innovative efforts in the various survey areas are described to supplement the summary tabulations.

5. Discussion of the EPA role and technical assistance activities applicable to the survey area.

The contents of each chapter and the questionnaire areas addressed are:

- *Chapter 3 – State and Municipal Noise Program Orientation and Stage of Development* – This chapter describes the level of State and municipal noise control activity in 1973. It demonstrates the relationship between (1) program orientation, and (2) the degree of program development. The first factor summarizes State and municipal responses to the orientation question in the first survey area. The second is based on an assessment of responses from all questionnaire areas. The categorization scheme presented provides the analytical base for many of the observations and distinctions made in the following chapters.

- *Chapter 4 – Legislative Provisions* – This contains a summary of the statutory basis for State and municipal noise control activities. It defines the various types of noise control legislation (e.g., enabling, nuisance, performance standards) which States and municipalities have enacted. Based on the copies of legislation submitted with the questionnaire responses and supplemental information obtained by the EPA Office of Noise Abatement and Control on State legislation, the number of States and municipalities adopting each type of legislative provision is presented. This chapter also includes a summary of EPA's noise regulatory activities.

- *Chapter 5 – State and Municipal Agencies Responsible for Noise Control Efforts* – The results of the organization question in the initial survey area are summarized. The number of States and municipalities delegating authority for noise activities to specific agencies is cited and a breakdown of the overall jurisdictions of these agencies is provided. The impact of organizational arrangements on noise program orientation and availability of expert personnel is also discussed.

- *Chapter 6 – State and Municipal Noise Budgetary Allocations* – 1973 noise expenditures and projected 1974 and 1975 budget allocations for each State and municipality have been tabulated in terms of per capita expenditures (cents per resident).

- *Chapter 7 – State and Municipal Noise Program Personnel* – Results have been categorized into personnel job titles. Based on this categorization, the number of States and municipalities reporting personnel affiliated with noise control activities is indicated for each job title.

- *Chapter 8 – Instrumentation* – Definition of nine types of sound measurement and analysis instrumentation and their functions are described and the number of instruments in-use are reported.

- *Chapter 9 – Enforcement* – This chapter consists of two sections. The first provides a tabulation and description of the enforcement actions instituted by States and municipalities in 1973. The noise sources most frequently cited in violation of noise statutes are described. The second section deals with enforcement problem areas.

- *Chapter 10 – Technical Assistance* – The types of needs identified by responding State and municipalities are related to a variety of program factors. An extensive discussion of the current EPA technical assistance program and how it addresses each category of identified State and municipal requirements is included in the second section of this chapter.

There are two appendices to the report. Appendix A contains the survey questionnaire. Appendix B is a list of the designated contact, title, and address of each agency involved in noise activities as reported by State and municipal respondents.

CHAPTER 2

SUMMARY

The survey results reflect the growing interest in noise abatement and control precipitated in large part by passage of the Noise Control Act. In 1973, many States and municipalities had initiated efforts to increase the scope of their noise control activities, adopt comprehensive legislation incorporating acoustical criteria, and allocate adequate resources for program implementation and enforcement. Comparison with the 1971 survey results demonstrates the growth in State and municipal involvement in noise control. This heightened level of State and municipal noise control activity may be attributable to:

1. The *statutory apportionment* of authority among the Federal, State, and local government and the retention of primary responsibility for noise control at the State and local levels,

2. The availability of *scientific evidence* of the hazardous effects of noise on the public health and welfare,

3. The increased concern and *public awareness* of daily high-level exposures from growing noise sources, and

4. The recognition that definitive *performance standards* offer an effective and enforceable approach to the regulation and control of environmental noise sources.

Within this overall expansion trend, significant variations were apparent in (1) the approaches used by States and municipalities to achieve their noise control objectives, and (2) progress made in implementing these differing noise control approaches. The survey data was sufficient to allow a determination of the progress made by States and municipalities in instituting noise control programs based on those reporting the constituent elements necessary for an effective program. This determination is reflected in the categorization of 1973 State and municipal noise control efforts into one of four stages of program development. The criteria used in this categorization are described in detail in Chapter 3 and summarized below:

1. *Established programs* – This category includes those States and municipalities that had comprehensive legislation incorporating acoustical criteria in effect in 1973 and that conducted extensive and diversified noise control activities. These programs include the integration of noise activities into a structured organizational framework, the allocation of personnel and funds, purchase of instrumentation, and institution of enforcement actions.

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2. *Limited programs* – While States and municipalities in this category were actively engaged in expanding the scope of their noise control activities, one or more of the elements which characterize established programs were absent. Structured State and municipal programs based solely on the implementation and enforcement of nuisance provisions; those directed at the control of noise from only one major class of noise sources or that utilize only one type of legislative approach (zoning); and comprehensive programs in the initial phases of development all fall within this category.

3. *Minimal activities* – These are unstructured efforts primarily directed to investigation of complaints and limited enforcement of nuisance provisions.

4. *No program effort* – This category includes those States and municipalities with no noise control activities in 1973.

Based on this categorization scheme, Table 2 summarizes the number of responding States and municipalities that reported each element necessary for an effective noise control program and those citing areas where technical assistance was needed.

All of the States and municipalities that had established programs and a substantial percentage of those with limited programs reported each 1973 resource area, noise activity, and program component listed in Table 2. Survey respondents in these two development categories had defined their noise control goals, established the statutory basis and organizational mechanisms for achieving these objectives, and were actively involved in implementing and expanding their noise control programs. In contrast, many respondents that conducted minimal activities had not allocated the resources necessary for sustained and comprehensive noise control efforts. However, all of these States and municipalities had designated a responsible agency, and with few exceptions, identified areas where technical assistance was needed. The only 1973 element reported by a significant number of the respondents in the category of no program effort was assistance needed for the initiation and establishment of noise control programs.

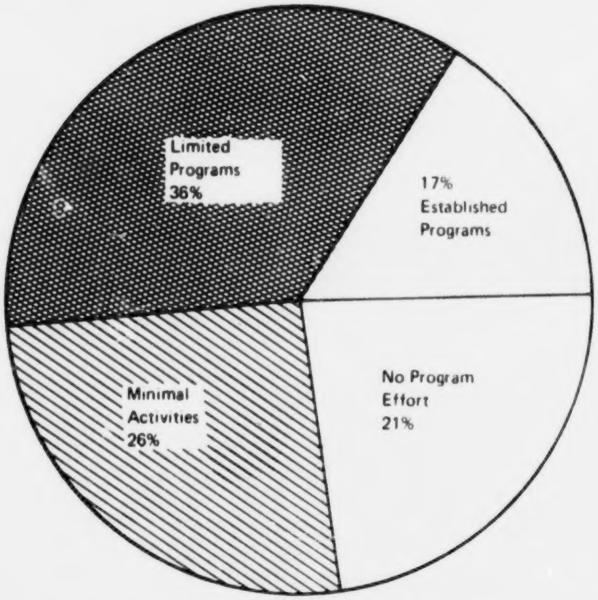
Figure 1 shows the distribution of State population among the four development categories. Figure 2 provides similar population breakdowns for municipal respondents. States with limited or established programs in 1973 represented a total population of almost 100 million. Approximately 27 million people lived in municipalities with established or limited noise control programs. Therefore, a significant percentage of the U.S. population resided in jurisdictions that had initiated structured noise control efforts and allocated resources to protect public health and welfare. However, the survey data did not provide an adequate basis for evaluation of the extent of noise control protection for the affected population. Although the largest number of reporting States and municipalities conducted minimal activities, this category constituted only 26 percent and 36 percent of the respective populations represented by State and municipal respondents. Approximately 38 million people resided in States that had not initiated noise control activities in 1973 and less than 9 million in municipalities with no program effort.

TABLE 2
SUMMARY OF REPORTED 1973 STATE AND MUNICIPAL NOISE CONTROL EFFORTS

Stage of program development	Number in category	Number reporting each 1973 element						
		Acoustical legislation[a]	Responsible agency	Budget	Personnel	Instrumentation	Enforcement actions	Technical assistance needs
State:								
Established program	3	3	3	3	3	3	3	3
Limited program	9	6	9	5	5	8	3	7
Minimal activities	20	7	20	8	11	15	3	17
No program effort	14	4	–	–	–	6	–	11
Total	46	20	32	16	19	32	9	38
Percent of total State respondents	100%	43%	70%	35%	41%	70%	20%	83%
Municipal:								
Established program	11	[b]11	11	11	11	11	11	11
Limited program	25	11	25	18	20	16	13	21
Minimal activities	92	21	92	15	26	22	57	74
No program effort	55	5	–	2	2	3	–	40
Total	183	48	128	46	59	52	81	146
Percent of total municipal respondents	100%	26%	70%	25%	32%	28%	44%	80%

[a] Survey data in this area has been supplemented by information available to EPA from other sources.

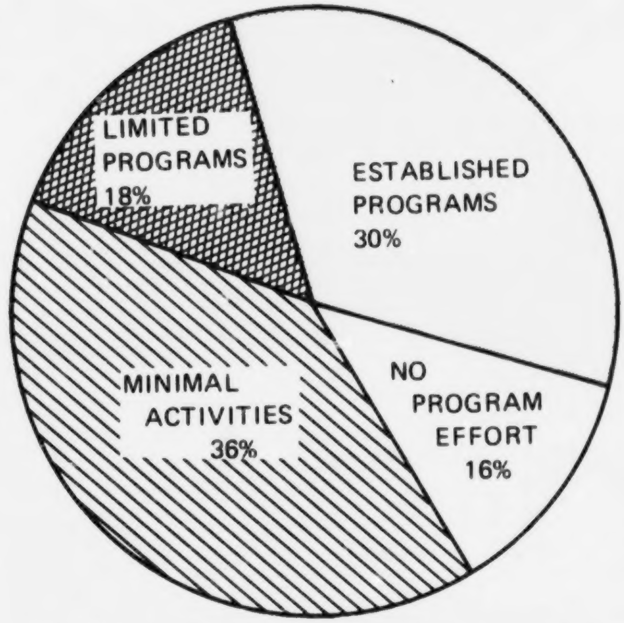
[b] Two municipalities with established programs did not provide copies of their legislation. However, their responses indicated that they did have acoustical legislation in 1973.



PERCENT OF POPULATION FROM TOTAL STATE SURVEY (183,998,000) BY STAGE OF NOISE PROGRAM DEVELOPMENT

STAGE OF PROGRAM DEVELOPMENT	NUMBER IN CATEGORY	POPULATION COVERED (IN THOUSANDS)	PERCENT OF TOTAL POPULATION
Established	3	31,836	17
Limited	9	66,894	36
Minimal activities	20	47,161	26
No program effort	14	38,107	21
Total	46	183,998	100

Figure 1. State population coverage as a function of the stage of program development



PERCENT OF POPULATION FROM TOTAL MUNICIPAL SURVEY RESPONDENTS (55,632,000) BY STAGE OF NOISE PROGRAM DEVELOPMENT

STAGE OF PROGRAM DEVELOPMENT	NUMBER IN CATEGORY	RESPONDANTS IN POPULATION CATEGORY (POPULATION IN THOUSANDS)				POPULATION COVERED	PERCENT OF TOTAL POPULATION
		75-149	150-249	250-499	500+		
Established	11	4	1	1	5	16,539,000	30
Limited	25	10	3	6	6	10,239,000	18
Minimal activities	92	53	17	12	10	19,869,000	36
No program effort	55	38	8	6	23	8,985,000	16
TOTAL	183	105	29	25	24	55,632,000	100

Figure 2. Municipal population coverage as a function of the stage of program development

Figure 3 depicts the geographic distribution of State and municipal noise control activities in relation to their varying stages of program development. Those States and municipalities not responding to the survey are also shown. The industrialized New England States, the Mid-Atlantic area, and the West Coast were the regions with the largest number of structured State programs. Established and limited municipal programs were concentrated among major urban areas and transportation centers. The figure reflects the tendency of noise control activities and regulations adopted by one jurisdiction to proliferate to contiguous areas – a pattern which offers opportunities for the development of coordinated regional approaches to noise control. Figure 3 also exemplifies the interdependency of State noise control efforts and those of municipalities within that State.

The most significant findings of the various survey areas are highlighted below with indepth discussion in the applicable chapters.

CHAPTER 3 – NOISE PROGRAM ORIENTATION

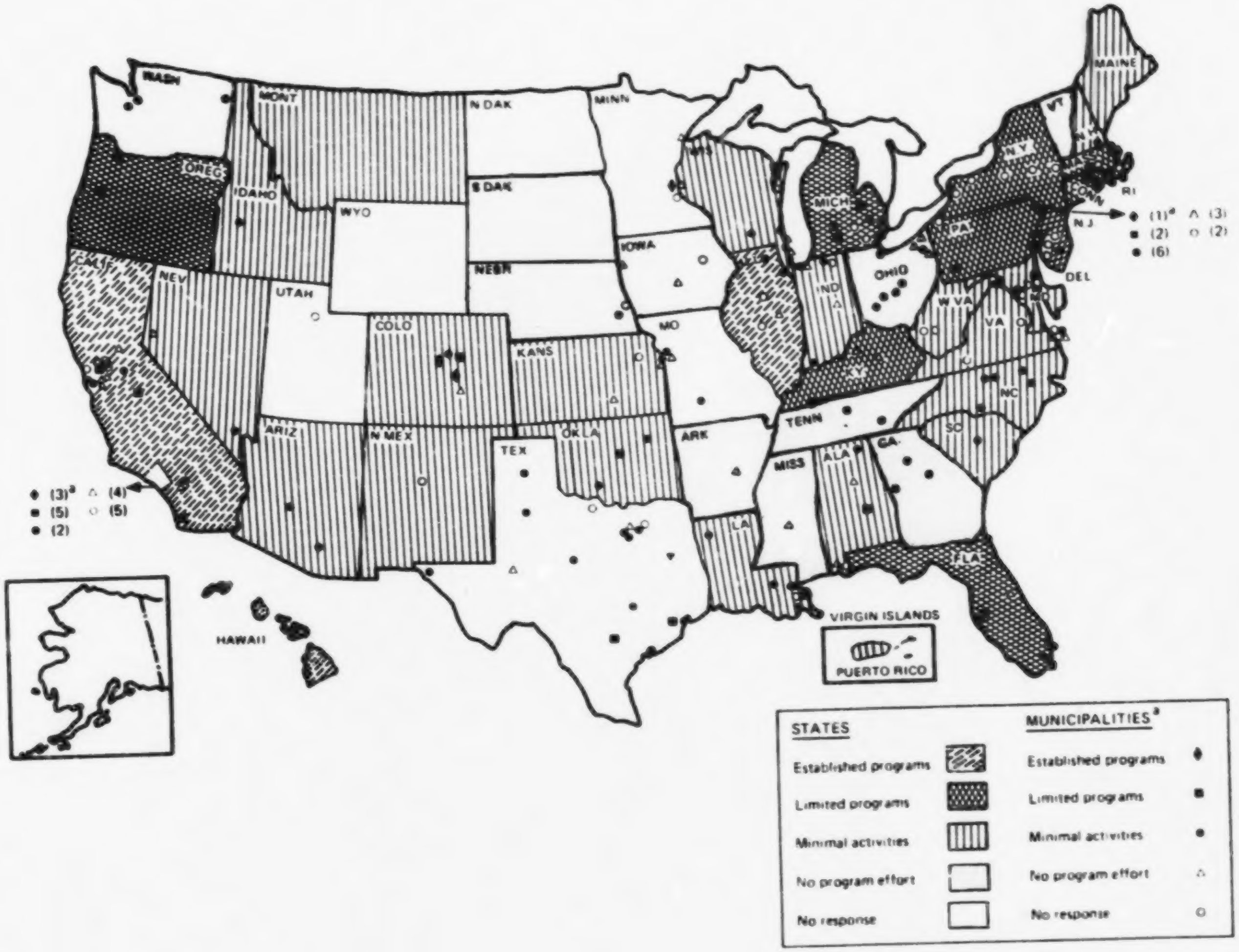
Program objectives and noise control approaches reported by States and municipalities have been categorized into the following types of program orientation:

1. *Revision/expansion of noise legislation* – All activities relating to the development of noise control statutes and regulations.
2. *Enforcement activities* – Investigations in response to complaints and enforcement actions instituted to insure compliance with noise control regulations and procedures.
3. *Public education* – Dissemination of information to increase public awareness of the effects of noise and of control techniques as well as to foster citizen participation in abatement efforts.
4. *Monitoring/surveillance* – Surveys of specific noise sources, periodic ambient monitoring, social surveys, and all other noise survey and monitoring functions.
5. *Research* – Studies, investigations, and research to identify noise problems and develop control measures.

Major findings in this area are:

There is a relationship between the stage of development of State and municipal noise control efforts and program orientation.

- *Established programs* were the most diversified and comprehensive in orientation with a significant percentage of the States and municipalities in this category reporting each type of orientation.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● (6)
STATES
Established programs
Limited programs
Minimal activities
No program effort
No response
MUNICIPALITIES a
Established programs ♦
Limited programs ■
Minimal activities ●
No program effort △
No response ○

[a] Figures in parenthesis denote number of municipalities in category

Figure 3. Stage of development of State and municipal noise control efforts

- *Limited programs* – A substantial number of States and municipalities with limited programs were involved in legislative revisions, enforcement, and noise monitoring with public education and research activities reported less frequently.

- *Minimal activities* – Less structured and diversified than either established or limited programs, these State and municipal efforts centered on development of legislation and, for municipalities in this category, enforcement and complaint activities based almost exclusively on nuisance provisions.

- *No program effort* – Consistent with the absence of 1973 noise control activity by these States and municipalities, the only program orientation reported was that of drafting legislation and proposing a noise control program for future years.

  Furthermore, 61 percent of the States and 38 percent of the municipalities reported a 1973 program orientation of revision/expansion of legislation. This represents a significant increase over the number of States and municipalities that were involved in expanding and upgrading their noise control statutes in 1971 and demonstrates the growth in State and municipal activity.

CHAPTER 4 – LEGISLATIVE PROVISIONS

- Two-thirds of the States and half of the municipalities were known to have noise control legislation in effect in 1973.

- Over 40 percent of the State respondents had legislation incorporating acoustical criteria. With few exceptions, noise sources regulated at the State level were recreational vehicles (primarily snowmobiles) and motor vehicles.

- While nuisance oriented legislation was the most frequently cited provision by municipalities, one-half of the municipalities that provided copies of their legislation had enacted performance standards.

- The types of performance standards most frequently adopted by municipalities were applicable to land use/zoning, motor vehicles, construction activities, and industrial noise sources.

CHAPTER 5 – AGENCIES RESPONSIBLE FOR NOISE CONTROL EFFORTS

- The number of States and municipalities that had delegated a responsible agency has significantly increased since 1971.

- With few exceptions, State noise control activities were the responsibility of either the public health department or the environmental services agency. The types of agencies most frequently identified by municipalities were the police department, public health department, environmental services agency, and planning and development agency.

- There has been an increase in the relative prevalence of environmental services agencies particularly for States and municipalities with structured programs since 1971.

CHAPTER 6 – NOISE BUDGETARY ALLOCATIONS

- Thirty-five percent of the States and 25 percent of the municipalities responding to the survey reported 1973 noise control expenditures. The total 1973 State and municipal budget was approximately $15 million. Municipal spending accounted for $2 million of this figure. However, excluding the State of California and its municipalities that reported 1973 expenditures, State and municipal funding for noise control totaled approximately $2 million in 1973.

- Both the number of States and municipalities allocating funds for noise control and the amount of program expenditures were projected to significantly increase in 1974 and 1975.

- The five States with 1973 per capita expenditures exceeding 1 cent had either established or limited programs. Municipalities with established programs spent an average per capita of 15 cents in 1973 while those with limited programs averaged 8 cents.

CHAPTER 7 – NOISE PROGRAM PERSONNEL

- Forty-one percent of the States and 32 percent of the municipalities reported at least one, full or part time, noise personnel position.

- The job category cited by the greatest number of States and municipalities was that of environmental specialist. The largest number of personnel were environmental technicians/inspectors primarily involved in noise monitoring and enforcement/complaint activities.

CHAPTER 8 – INSTRUMENTATION

- Seventy percent of the States and 28 percent of the municipalities reported one or more instruments and therefore had the potential to objectively quantify noise levels.
- In several cases, it appeared that available instrumentation was not being effectively used due to a lack of trained manpower and/or quantitative standards.

CHAPTER 9 – ENFORCEMENT

- Twenty percent of the State respondents and 44 percent of the municipal respondents reported instituting noise enforcement actions in 1973.
- A small percentage of respondents accounted for the overwhelming majority of enforcement actions instituted.
- In some cases, lack of quantitative noise standards, trained personnel, or appropriate instrumentation appeared to limit the effectiveness of reported State and municipal enforcement efforts.
- The enforcement problem areas cited by the greatest number of States and municipalities were surface transportation systems. The problem noise sources most frequently identified in the surface transportation category were trucks, motorcycles, and automobiles.

CHAPTER 10 – TECHNICAL ASSISTANCE

- Approximately 80 percent of the State and municipal respondents identified one or more problems limiting their noise control efforts or areas where technical assistance was required. A substantial need therefore exists among States and municipalities for an expanded EPA assistance program.
- Model legislation was the most frequently cited State and municipal need.
- Assistance with developing measurement methodologies and enforcement criteria necessary for the effective implementation of noise control legislation was also required by a substantial number of respondents.
- Resources necessary to establish and operate noise control programs were often identified and included personnel, instrumentation, and funding.

- The EPA technical assistance program (which is discussed in detail in Chapter 10) is presently addressing each identified area of State and municipal noise control requirements with the exception of funding.

CONCLUSIONS

- There has been a significant increase in the overall level of State and municipal noise control activity since the 1971 survey. A substantial percentage of States and municipalities had completed the exploratory phases of initiating noise control activities and were implementing comprehensive noise control programs in 1973.
- This increased involvement was particularly apparent at the State level. A larger percentage of the State respondents reported 1973 noise control expenditures, personnel allocations, instrumentation purchases, and adoption of legislation incorporating acoustical criteria than did reporting municipalities.
- An intense interest in developing noise control programs was expressed by many of those States and municipalities that had not established structured noise control programs in 1973.
- Many States and municipalities had initiated comprehensive program planning, monitoring to identify and assess noise problems, and development of quantitative noise regulations to insure that proposed noise control activities were based on a technically sound, legally enforceable, and cost/effective approach.
- While no attempt has been made to evaluate individual State and municipal noise control activities, the survey results indicate that some State and municipal efforts were limited by insufficient resources and inadequate legislative authority.
- A comprehensive and expanded Federal assistance program is essential to satisfy the identified requirements of State and municipal governments and to assure that Federal, State and municipal noise control efforts are mutually supportive.

FUTURE EPA PLANS

The more recent EPA experience in providing technical assistance to States and municipalities confirms and substantiates the major findings of the 1974 survey. State and local governments continue to enact legislation, develop organizational structures, and allocate resources for noise control programs at an accelerated pace. As of November 1975, 14 States had promulgated revisions to noise control statutes that were in effect in 1973. A comparable increase in activity is apparent at the municipal level which should be further stimulated by the recent completion of EPA's community model noise ordinance. The magnitude of this projected growth in the number of States and municipalities initiating noise control programs over a short period has significant implications for the EPA technical assistance program.

One of the State and municipal requirements identified in the 1974 survey – additional funding – has become increasingly critical. The present economic situation and the competing demands for limited State and municipal resources has forced some States and municipalities to reduce noise control activities; others have deferred planned program expansion; and the situation has also prevented several States and municipalities from initiating noise control efforts.

As part of a continuing critical assessment of the status of State and municipal environmental noise control activities, EPA is in the process of designing a followup survey which will differ in several respects from that conducted in 1974:

- The survey sample will be larger encompassing all 50 States, incorporated municipalities with populations greater than 10,000 and approximately 500 counties,
- A more specific and detailed questionnaire will be used to facilitate both State and local responses and data analysis, and
- The scope of the questionnaire will be expanded to cover all spheres of environmental noise control.

Using the results of the present survey as a baseline from which to assess progress in the establishment and operation of State and municipal noise control programs, it is anticipated that future surveys will continue to provide information necessary for both EPA's technical assistance program and regulatory activities.

CHAPTER 3

STATE AND MUNICIPAL NOISE PROGRAM ORIENTATION AND STAGE OF DEVELOPMENT

This chapter describes the 1973 level of noise control activity reported by States and municipalities. It traces the relationship between two factors -- (1) program orientation and (2) stage of program development. Program orientation refers to the approaches adopted by States and municipalities to fulfill their primary responsibility for noise control; the stage of program development reflects the progress made by States and municipalities in implementing these approaches. Together, these two factors provide a perspective on the types and scope of noise control activities undertaken by States and municipalities, as well as the framework for the EPA assessment of State and municipal 1973 noise control efforts.

In analyzing the survey results, State and municipal activities have been categorized by both program orientation and stage of development. This categorization scheme:

- Provides a means to compare reported State and municipal efforts,
- Serves as the analytical base for many of the observations and distinctions made in the following sections, and
- Includes a measure against which developments in future years may be evaluated.

To obtain information on the orientation of noise control activities, surveyed States and municipalities were asked to describe program objectives and components (e.g., ordinance development, public education). Activities were evaluated using the following five categories of program orientation:

1. *Revision/Expansion of Noise Legislation* – This category encompasses all activities relating to the redefinition of statutory provisions for noise control. Included are all phases of the legislative process – from preparation of initial studies and support documentation, to drafting ordinance specifications, through giving testimony to support adoption by the legislature.

   The objectives of this program orientation are the enactment of technically sound and enforceable noise control legislation, delegation of authority, and authorization of resources necessary to mount an effective noise control program. State and municipal efforts included are:

- Development of quantitative legislation to supplement an approach based solely on nuisance provisions,

- Promulgation of standards and regulations in compliance with previously enacted enabling legislation,

- Legislative revisions to include regulation of additional noise sources or problems, and

- State development of model ordinances for municipalities.

2. *Enforcement/Complaint Activities* — The objective of this program orientation is to achieve compliance with noise control regulations. Enforcement covers a broad spectrum of activities. The types of enforcement techniques used by a specific State or municipality are a function of the legislative authority on which the State or municipal noise control program is based. Activities included in this category are inspections and investigations in response to complaints, motor vehicle compliance testing, permit issuance, required registration of sources, issuance of citations, conferences and hearings to prepare legal actions, and conduct of court cases.

3. *Publication Education* – This program orientation involves the dissemination of information to (1) increase public awareness of noise as an environmental problem, (2) stimulate citizen involvement in noise control efforts, and (3) inform the public of noise control regulations and complaint procedures. In addition to responding to citizen requests, this category includes information dissemination through issuance of publications, television and radio interviews, newspaper articles, lectures to citizen groups, and incorporation of noise control studies in school curriculums.

4. *Monitoring/Surveillance* – All noise survey and monitoring functions are included in this category such as social attitudinal surveys, periodic ambient monitoring, and surveys of specific noise problems. The comprehensiveness and objectives of monitoring activities, as well as the types of noise instrumentation used, vary widely among States and municipalities involved in this program orientation. The purposes of State and municipal noise monitoring and surveillance activities include:

   - Gathering data on noise problems and citizen attitudes to aid in the design and development of a noise control program,

   - Obtaining technical data for use in the development of regulations and measurement methodologies,

- Establishing an acoustical baseline data bank against which trends and developments in future years may be measured, and
- Providing noise data necessary for the preparation of Environmental Impact Statements.

5. *Research* – This category encompasses studies, investigations, and research directed at the identification of noise problems and the design of control measures. State and municipal efforts falling within this program orientation include:

    - Preparation of strategies and conduct of supporting studies (cost/benefit analyses) necessary for program planning,
    - Compilation of data on noise effects, noise control technology, and noise control approaches and regulations adopted by other States and municipalities.
    - Development of mathematical predictive models,
    - Development of design and construction specifications for noise abatement measures (e.g., barriers),
    - Establishment of noise criteria for application in land use planning, equipment procurement, building construction, and transportation planning, and
    - Development of training programs, noise education requirements, and specifications for noise instrumentation and its use.

Reported State and municipal noise control efforts have also been categorized into one of four stages of program development. Unlike other survey areas, no quantitative measure exists on which to base an evaluation of progress made by States and municipalities in achieving their noise control objectives. Therefore, indirect indices have been used to estimate the total level of program activity. These indices are: (1) the types and provisions of noise control legislation; (2) the existence of a responsible agency for noise control activities; (3) the amount of funds budgeted for noise control; (4) the number of personnel involved and their areas of expertise; (5) the number and types of noise instrumentation available for program use; and (6) the number of enforcement actions instituted. The criteria used to categorize the stage of State and municipal program development are as follows:

1. *Established Programs* – States and municipalities in this category have adopted a comprehensive approach to noise control based on the implementation of legislation incorporating acoustical criteria. Characterized by a high level of noise control activity and integration of program elements into a structured, functional relationship, these programs have personnel, funding, instrumentation, and include enforcement activities.

2. *Limited Programs* – The absence of one or more of the program elements characterizing an established program is the primary criteria for placing a State or municipal program in this structured category. However, both a moderate degree of noise control activity and a demonstrated interest in abating noise problems are present. Limited programs fall into three subcategories:

   (a) Programs based solely on the implementation and enforcement of nuisance provisions. Despite the absence of performance standards and noise measurement instrumentation, noise control efforts are actively pursued.

   (b) Programs directed at the control of noise from only one major class of noise sources (e.g., motor vehicles) or that utilize only one noise control approach (e.g., zoning). Although structured programs with legislation, funding, personnel, instrumentation, and enforcement, these efforts lack the comprehensive orientation of established programs.

   (c) Comprehensive programs in the initial phases of development. Typically, these are structured programs in their first or second year of existence. The primary thrust of activities is the development of standards and criteria to implement enabling legislation. As a result, no enforcement actions have been instituted.

3. *Minimal Activities* – States and municipalities in this category do not have a structured noise control program. Efforts usually consist of investigation of complaints and limited enforcement of nuisance provisions. Resources (personnel, funds, instrumentation) are drawn from other programs and applied on an as needed basis.

4. *No Program Effort* – This category is composed of those States and municipalities that did not conduct noise control activities in 1973. Although nuisance provisions may exist, they are neither implemented nor enforced with respect to noise control.

The above categorization reflects the status of State and municipal efforts as of 1973. However, some States and municipalities, that in 1973 conducted minimal activities or that made no program effort, were in the process of proposing a comprehensive noise control program based on legislation incorporating acoustical criteria. The discussion of the survey results has been qualified to include these future plans.

DATA LIMITATIONS AND ANALYTICAL CONSTRAINTS

Analysis of the level of State and municipal noise control activity required a great degree of interpretation and evaluation of responses to all survey areas. Inferences and assumptions drawn are clearly identified and qualified in the discussion. The following limitations should be taken into account:

- Each of the survey areas (e.g., budget, personnel) used in categorizing the stage of development of State and municipal activities are subject to specific data limitations.
- Several States and municipalities in defining their program orientation appear to have described activities they would like to initiate if resources and legislation were available rather than what was actually occurring in 1973.
- No assessment has been made of long-term program goals in the few instances where States and municipalities provided this information. Neither has an evaluation of the success of reported State and municipal noise control efforts been made. In future years, especially for States and municipalities conducting baseline community noise surveys to be followed up by periodic monitoring, an evaluation of program success should be possible.

RESULTS AND DISCUSSION

Based on the categorization scheme described above, Figures 4, 5, and 6 depict the 1973 level of State and municipal noise control activity. Figure 4 indicates the percentage of responding States and municipalities in each of the four stages of program development. Figure 5 shows the percentage breakdown of the program orientations reported by the 46 responding States and territories as a function of the stage of development. Figure 6 presents similar information for the 183 municipal survey respondents.

The survey results support two overall conclusions in this area:

1. *There is a definite relationship between the stage of development and the program orientation of State and municipal noise control efforts.*
2. *There has been a significant increase in the level of State and municipal noise control activity since the 1971 survey.*

The first conclusion is substantiated by a discussion of the program orientations which characterize the four categories of program development.

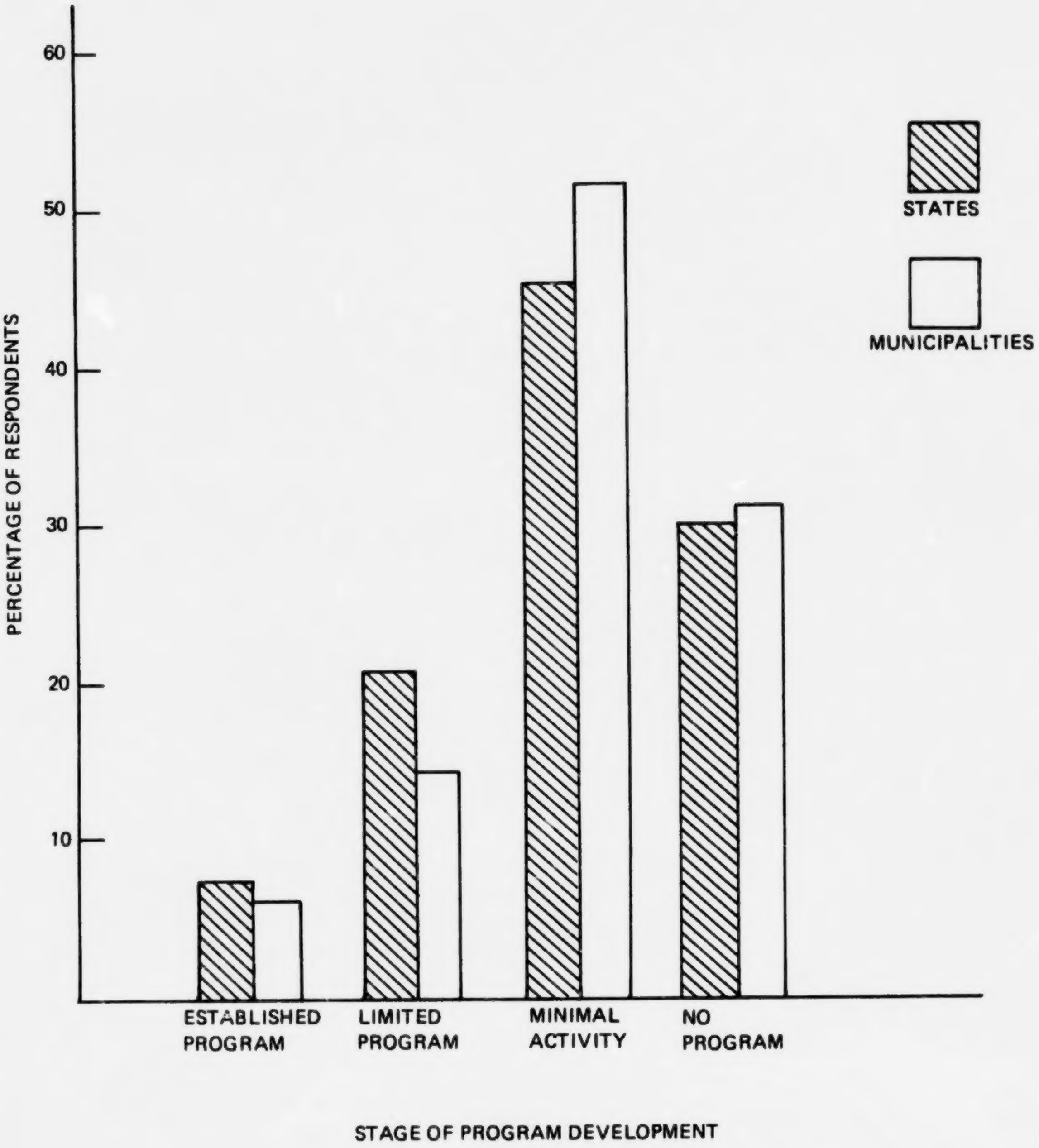

Figure 4. Percentage of responding States and municipalities in each of the four stages of program development

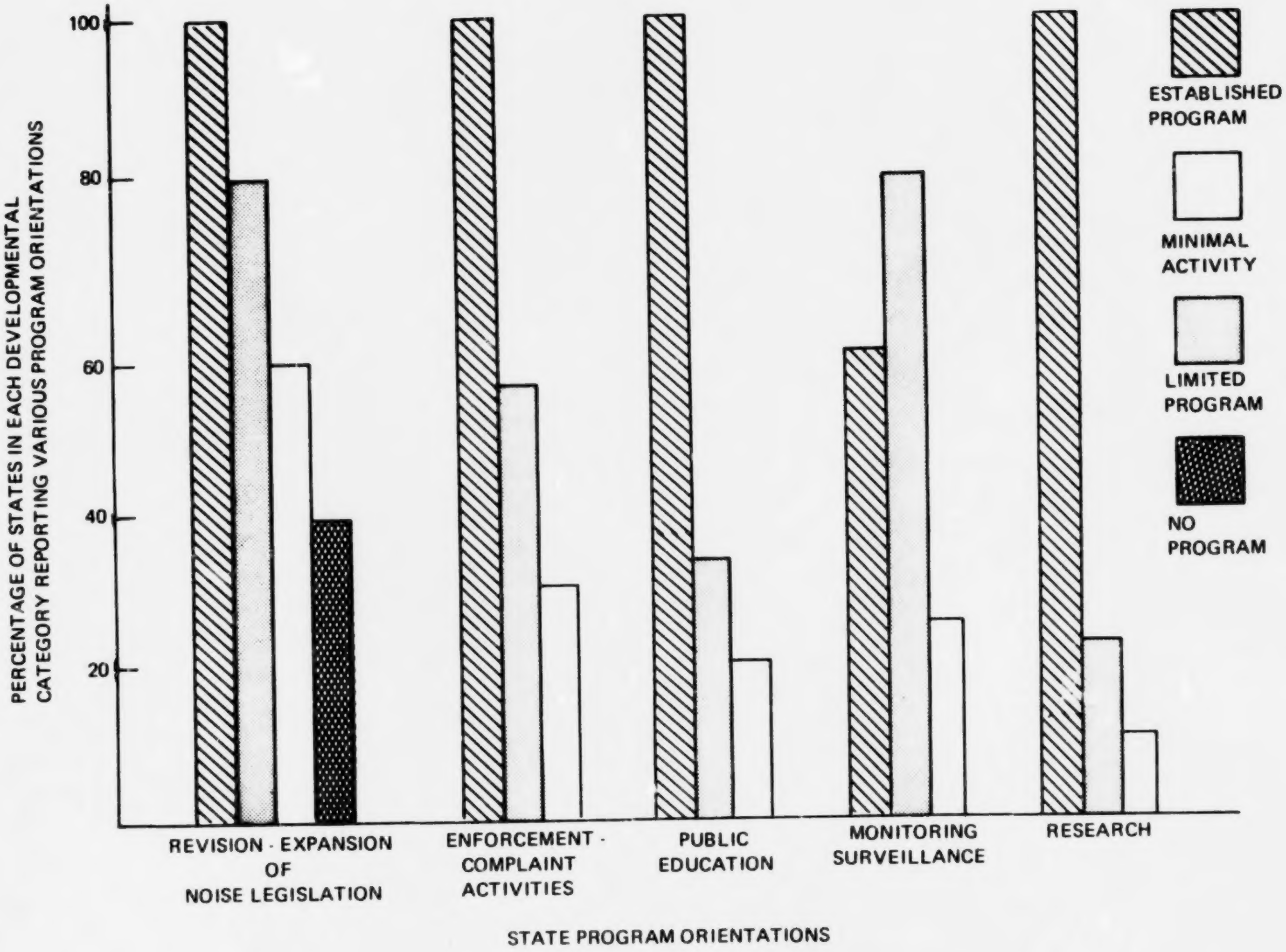

Figure 5. 1973 level of State noise control activity as a function of the stage of program development

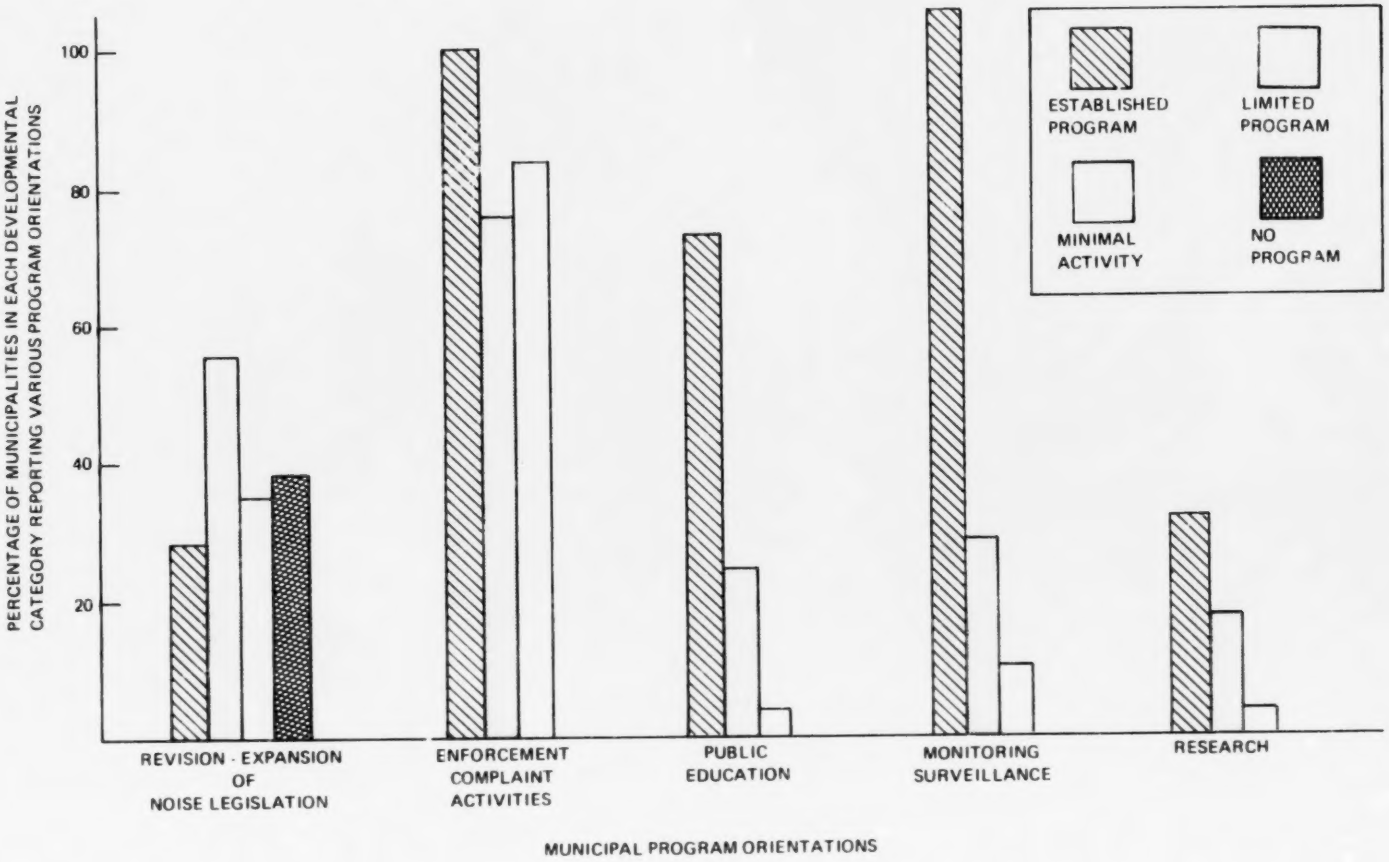

Figure 6. 1973 level of municipal noise control activity as a function of the program stage of development

Established programs

Three States and 11 municipalities fall in this category. As a group, these programs were the most comprehensive and diversified in orientation of any category of program development. With the exception of Hawaii, which did not conduct monitoring/surveillance activities in 1973, the three States (California, Hawaii, and Illinois) with established programs reported involvement in all five areas of program orientation. The category of established programs was the municipal stage of development with the highest percentage involvement in all program orientations except that of revision/expansion of ordinance. In contrast to established State programs, only 27 percent of the municipalities with established programs reported this orientation. This may reflect differing approaches at the State and municipal level. Very often, States adopt enabling legislation and subsequently promulgate specific source regulations over several years. In contrast, many municipalities adopt comprehensive noise control ordinances which include a number of acoustical noise control standards and regulations. Subsequent municipal legislative revisions encompass authorization to regulate additional noise sources or changes in the standards contained in the original ordinance.

A second distinction in program orientation between States and municipalities with established programs is the greater State involvement in noise control research. This may be indicative of (1) the differing approaches and types of noise problems dealt with at the State and municipal levels and (2) the greater resources available at the State level and the consequent municipal reliance on the results of Federal and State noise research efforts.

Limited programs

This category includes nine States and 25 municipalities. While not as comprehensive nor marked by the same level of noise control activity as were established efforts, programs in this group often included legislative revisions, enforcement and noise monitoring activities. To a lesser extent, public education and research studies were also conducted. Over 75 percent of the States with limited programs reported efforts to revise or expand their legislation. This orientation often reflected (1) the development of standards and criteria to implement recently enacted enabling legislation, and (2) proposals to expand legislative coverage to regulate additional noise sources or to authorize alternative noise control approaches. A similar percentage of States with limited programs were involved in monitoring and surveillance activities. These efforts were frequently performed to gather technical data for use in revising legislation or developing source regulations.

Enforcement/complaint activities was the program orientation cited most frequently by municipalities with limited programs. This municipal stage of development was that with the highest percentage involvement in legislative revisions. In some instances, enforcement activities may have pointed out statutory inadequacies and contributed to efforts to upgrade existing noise control ordinances.

Minimal activities

The greatest number of reporting States and municipalities fall into this category – 20 States and 92 municipalities. These State and municipal efforts are far less structured and diversified than either established or limited programs. The program orientations most frequently reported by States and municipalities in this category were enforcement complaint activities and revision/expansion of legislation. Research, monitoring/surveillance, and public education activities received less program emphasis.

The most frequently reported orientation among States in this development category involved efforts to revise noise control legislation and expand the structure and scope of noise control activities. In contrast, a majority of the municipalities conducted enforcement/complaint activities, reflecting an exercise of police power at the municipal level to abate noise as a nuisance. The survey results suggest that in the initial phases of noise program development, State efforts are directed towards the establishment of an adequate legislative base while municipalities often undertake increased enforcement of existing nuisance codes to control noise problems. To a lesser extent, States and municipalities conducting minimal activities had initiated monitoring and surveillance. Most frequently, community noise levels and citizen attitudes were analyzed for the purpose of planning and developing a noise control program.

No program effort

This category includes 14 States and 55 municipalities. Consistent with the absence of noise control activity, the only program orientation reported was that of developing legislation. Six States and 21 municipalities that did not have a noise control program in 1973 were in the process of drafting legislation and proposing a noise control program for future years.

The second overall observation in this area relates to the growing State and municipal involvement in noise control. This increased involvement is reflected in the differences between the 1971 and 1973 levels of State and municipal noise control activity. The findings of the 1971 survey which are applicable to the activity level of State and municipal efforts are:

- States and municipalities, with few exceptions, were only beginning to deal with noise control.
- A greater percentage of the municipalities surveyed, as compared to the States, had noise control programs.
- Only eight of the responding 41 States and 11 of the reporting municipalities were involved in developing noise control legislation.

By 1973, a significant increase is apparent in both the prevalence of State and municipal noise control efforts and the number of States and municipalities which had instituted structured noise control programs. Twenty-six percent of the States and 20 percent of the municipalities responding to the survey had either established or limited programs. Less than a third of the reporting States and municipalities had not initiated noise control activities in 1973. Further, a significant number of the States and municipalities included in the category of no program effort were in the process of developing noise control legislation. The increase in activity is particularly marked at the State level. As shown in Figure 4, a slightly greater percentage of the States had structured programs than did the municipalities.

The best indicator of the growth of State and municipal noise control involvement over the 2-year period is the number of States and municipalities reporting a 1973 program orientation of revision/expansion of legislation. Sixty-one percent of the States and 38 percent of the municipalities reported this orientation. For States and municipalities with established or limited programs, these activites involved the expansion and upgrading of existing noise control statutes. For those conducting minimal activities or no program effort, this orientation involved the development of adequate legislative authority from which to establish an effective noise control program. The large-scale increase in these efforts over 1971 is consistent with the demonstrated interest in noise control at the State and municipal level.

NOTEWORTHY PROGRAMS

Many of the States and municipalities responding to the survey had instituted innovative techniques and comprehensive approaches to deal with their noise problems. The 1973 orientation of effort of several States and municipalities with established or limited programs is discussed below.

- *State of Florida* – Noise control activities encompass all five classes of program orientation. The evolution of the Florida program during the period 1971-1973 is characterized by a large increase in public and legislative interest in all aspects of noise control and a shift in emphasis from initial concentration on motor vehicle noise to more comprehensive noise abatement efforts. In 1971, the Florida Department of Pollution Control (FDPR) was delegated responsibility for noise, but no funding was allocated. In 1972, a low level of noise control activity was authorized and legislation enacted that require the FDPC to develop noise control standards and tests for measuring motor vehicle exhaust system noise at Florida's Official Inspection Stations. In 1973, major legislative interest centered around education and roadbuilding issues, increased resources were allocated for noise control, and a statewide program was initiated. In 1973, the need for immediate action and the amount of available funds precluded the establishment of a large-scale program based on the development of noise control regulations enforced by the State.

The *primary objective* of 1973 noise control activities was to achieve the maximum degree of community noise reduction at a minimum cost. Extensive planning and feasibility studies were carried out to define the approaches which would best meet this objectives. The scope of the Florida program is delineated in Figure 7 which indicates the noise-related functions of the FDPC. Noteworthy features of Florida's 1973 noise control activities include:

Development of a strong, mutual working relationship between the FDPC and the academic community to make available the acoustical expertise, facilities, and instrumentation of the State universities,

Coordination of the noise activities of the 11 State agencies with noise control responsibilities to minimize overlaps and gaps in effort,

Provision of technical assistance to local governments to help them develop their noise ordinances,

Development of an overall motor vehicle noise control plan which will evaluate all possible noise control techniques,

Provision of support to the legislature in the drafting and analysis of proposed noise control legislation, and

Preparation of preliminary design and feasibility data to allow *development of total noise control systems* using advanced sound level acquisition and evaluation techniques.

- *Los Angeles, California* – This municipality, with a 1970 census population of 2,816,000, had an established noise control program in 1973. Program orientation included enforcement, public education, monitoring/surveillance, and research activities. The City's noise control ordinance includes both nuisance provisions and acoustical zoning criteria. The most noteworthy aspects of the Los Angeles program orientation involve methods designed to prevent the growth and concentration of noise sources and problem areas as well as techniques to predict and evaluate community noise levels. These efforts include:

Provision of assistance to various City departments in the *preparation of Environmental Impact Reports (EIR) and Statements (EIS)* including field noise surveys, and predictions of future significant noise impact of public and private projects,

Review of Community Plan EIR's to assess the adequacy of acoustic analysis and mitigating measures to protect the health and welfare of citizens,

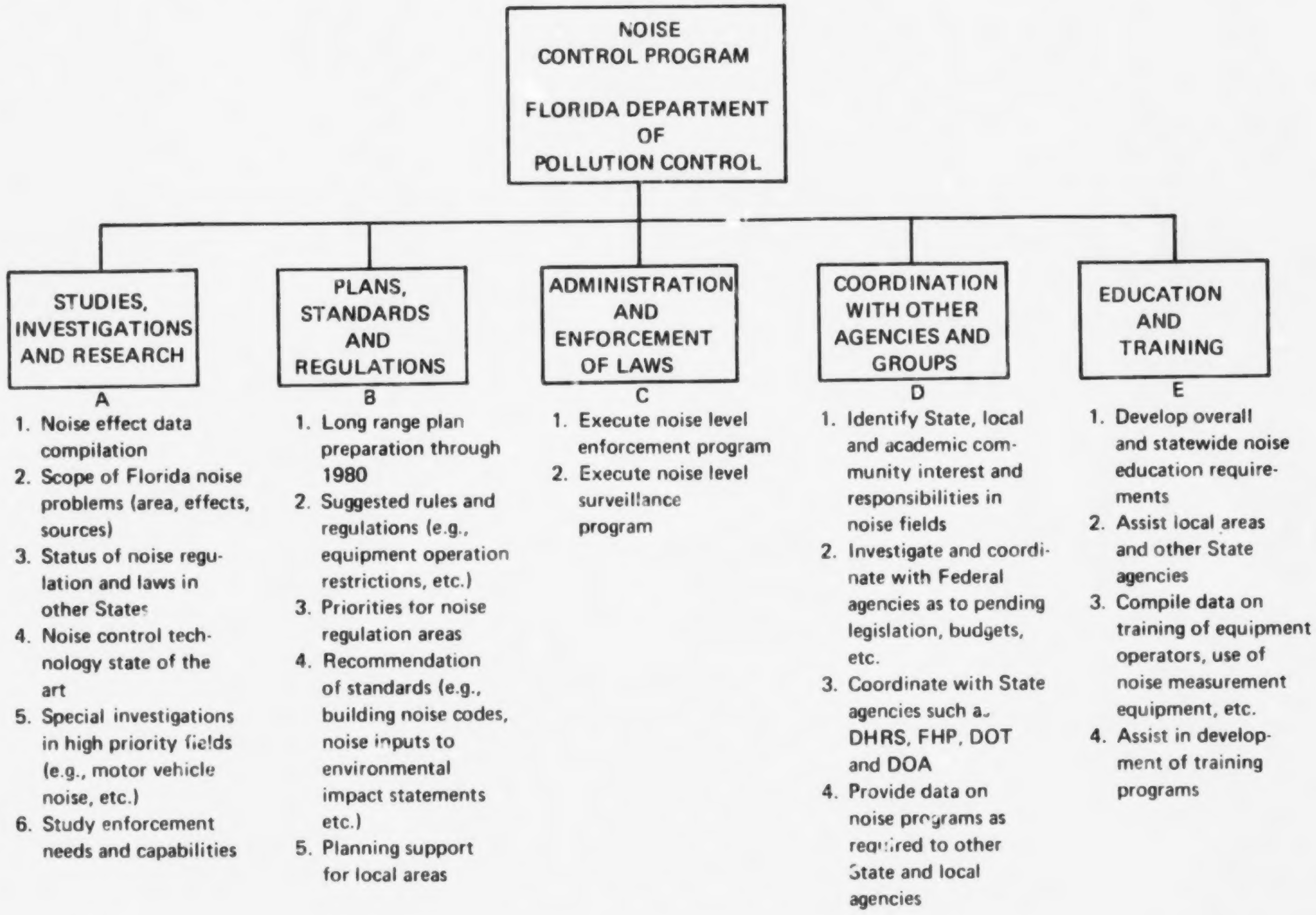
NOISE CONTROL PROGRAM
FLORIDA DEPARTMENT OF POLLUTION CONTROL
STUDIES, INVESTIGATIONS AND RESEARCH
A
1. Noise effect data compilation
2. Scope of Florida noise problems (area, effects, sources)
3. Status of noise regulation and laws in other States
4. Noise control technology state of the art
5. Special investigations in high priority fields (e.g., motor vehicle noise, etc.)
6. Study enforcement needs and capabilities
PLANS, STANDARDS AND REGULATIONS
B
1. Long range plan preparation through 1980
2. Suggested rules and regulations (e.g., equipment operation restrictions, etc.)
3. Priorities for noise regulation areas
4. Recommendation of standards (e.g., building noise codes, noise inputs to environmental impact statements etc.)
5. Planning support for local areas
ADMINISTRATION AND ENFORCEMENT OF LAWS
C
1. Execute noise level enforcement program
2. Execute noise level surveillance program
COORDINATION WITH OTHER AGENCIES AND GROUPS
D
1. Identify State, local and academic community interest and responsibilities in noise fields
2. Investigate and coordinate with Federal agencies as to pending legislation, budgets, etc.
3. Coordinate with State agencies such as DHRS, FHP, DOT and DOA
4. Provide data on noise programs as required to other State and local agencies
EDUCATION AND TRAINING
E
1. Develop overall and statewide noise education requirements
2. Assist local areas and other State agencies
3. Compile data on training of equipment operators, use of noise measurement equipment, etc.
4. Assist in development of training programs

Figure 7. Statutory responsibilities of the Florida Department of Pollution Control

Establishment of an acoustical baseline data bank for future citywide use through field noise surveys,

Development of mathematical models to predict noise levels from various kinds and numbers of sources,

Assistance in the acoustical analysis and design of public and private projects, and

Provision of advice on noise control methods including land use management techniques, environmental zoning, building codes, and noise ordinances and regulations.

- *St. Petersburg, Florida* – St. Petersburg is predominately a retirement but growth-oriented municipality with a 1970 census population of 216,000. This established program was comprehensive in nature encompassing all five categories of program orientation. Monitoring and surveillance activities were conducted for a variety of reasons: to determine ordinance violations for enforcement, to evaluate community noise levels, and to provide data for the development of predictive models to estimate noise levels from future traffic patterns. Dependent on funding availability, additional noise control activities and projects were planned including a comprehensive community noise assessment project.

- *Inglewood, California* – This municipality, with a population of 90,000 is an acknowledged leader in noise control. Proximity to the Los Angeles International Airport has been a major factor in shaping the orientation of Inglewood's established program. The major elements of Inglewood's 1973 noise control activities were:

  Aircraft noise abatement research and advocacy – The extensive nature of these efforts was reflected in a list of 23 reports prepared by the Environmental Standards Division of the city dealing with all aspects of aircraft noise and recommended abatement techniques.

  Community noise monitoring – The City has approximately $50,000 invested in four remotely operated aircraft noise monitoring stations and one mobile acoustics laboratory. These facilities are used to measure and evaluate community noise levels and to provide technical data for enforcement, environmental impact statement preparation, and a variety of other specialized noise control activities.

  Noise ordinance development and enforcement – The City's noise code includes nuisance provisions and land use regulations based on acoustical criteria. Additional legislation was being proposed including an acoustical treatment (soundproofing) ordinance for aircraft noise zones in Inglewood.

Noise control for city vehicles – Activities in this category included a study for the assessment of the environmental impact of route alignment alternatives for a proposed interstate highway.

Noise studies for city planning programs – These included work carried out in support of the development of a noise element for the municipal general plan required by California statutes.

- *Lakewood, Colorado* – Lakewood had a 1970 census population of 83,000. This was an established program with an orientation encompassing the areas of enforcement, public education, and monitoring/surveillance activities. A comprehensive noise control ordinance was enacted in 1973 which incorporated nuisance provisions and acoustical criteria covering motor vehicles, light residential equipment, land use, and industrial zoning. The aggressive nature of the program is reflected in the fact that Lakewood projected the highest per capita expenditure for 1974 of any reporting State or municipality. The underlying philosophy and thrust of the program is voluntary compliance through public education. Noise control activities are directed by an autonomous unit in the municipal department of community development authorized with enforcement and development review powers. Public involvement is stimulated through a citizen focal organization which is empowered to review the education and enforcement activities of the program. Lakewood's noise control efforts are based on three primary program elements:

  Ordinance activities – Implementation of the ordinance provisions consists of public education, information, vehicular enforcement, complaint response, and permit issuance.

  Development review – This element involves the review of all rezoning submittals to pinpoint potential noise problems and to correct such situations by interaction with the developer and his engineer. The noise criteria used to evaluate community noise impact are the Housing and Urban Development Noise Assessment Guidelines and the district levels specified in the Lakewood ordinance.

  Subprograms – Six activities were underway in 1973. These included city vehicle compliance testing, building code modifications for internal structural noise control, specifications for equipment purchases by the City, and exploration of current vehicle noise problems on existing major highways.

These programs exemplify the variety of noise control approaches developed by States and municipalities, many of which have applications to other jurisdictions.

CHAPTER 4

LEGISLATIVE PROVISIONS

One of the purposes of the survey was to determine the extent to which the demonstrated interest among citizens and legislators in noise control had been translated into the adoption of appropriate legislation. Adequate statutory authority is essential for the establishment of an effective noise control program and should include the following components:

- Delineation of the objectives and purposes of noise control efforts, delegation of the authority necessary to attain those objectives, clear definition of the responsibilities and powers of the agency or agencies involved, and authorization of funding appropriations;

- Regulation of noise sources and their impact using performance standards. Selection of sound level limits should be based on (1) protection of the public health and welfare, (2) local conditions, (3) economic reasonableness, and (4) technical practicality; and

- Enforcement provisions which may be upheld in court, which allow for uniform determination of violation of noise regulations and procedural requirements, which will generate citizen support, and which are consistent with Federal preemptive provisions.

While Federal authority to control noise derives from the Commerce Clause of the United States Constitution, the traditional police power provides the basic formal authority for noise control measures by State and municipal governments. The State and local regulation of environmental noise may be based on the police power in one or more of three subcategories: (1) protection of the public health and welfare; (2) abatement of noise as a nuisance; and (3) preservation of the public peace and tranquility. With documented scientific evidence of the hazardous effects of noise now available, States and municipalities are turning to performance standards—the major legal basis for which is the protection of the public health and welfare.

Within the legal constraints imposed by the preemptive provisions of Federal law, States and municipalities may utilize a variety of techniques in exercising the police power to control environmental noise. These include establishment of ambient noise levels, promulgation of zoning laws and building codes incorporating acoustical criteria, setting of use and operational limits on products, and promulgation of noise emission standards for new products not regulated by the Federal Government.

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The types of legislative provisions which States and municipalities have enacted to exercise their authority to control noise are:

- *Enabling legislation* – This is a declaration of policy by the legislature describing the need for noise control, outlining program goals and objectives, and establishing the organizational framework to carry out noise control activities. Enabling legislation is typically the initial step towards formulation of a noise control program and reflects a recognition of noise as a serious environmental problem. It includes delegation of authority to a specific agency or agencies and stipulation of those agencies' functions and powers. At the municipal level, enabling provisions are usually incorporated within a comprehensive noise control ordinance. At the State level, enabling legislation usually defines the scope of noise control efforts, the types of specific noise criteria, standards, and regulations to be promulgated, the regulatory development process, and often the timetable for development.

- *Nonquantitative legislation* – Such statutes are more commonly referred to as nuisance ordinances. They are based on the common law approach to noise control designed to prevent noise causing public annoyance or menace to the public comfort or safety. Under nuisance provisions, it is unlawful to emit unreasonably loud, disturbing, or unnecessary sounds. The following examples are common nuisance provisions found in municipal ordinances.

  1. Unreasonable sounds by machines and construction equipment are illegal during certain hours.

  2. It shall be unlawful to sound any horn or signaling device except in an emergency.

  3. It shall be unlawful to play any radio, phonograph, musical instrument, or operate outdoor amplifying equipment during the nighttime hours (10 pm-7 am) so as to disturb any persons.

  4. Mufflers may not be in poor working order emitting unusually loud noises.

  5. The creation of excessive noise adjacent to a school, hospital, or church which may interfere with ongoing activities is prohibited.

  6. Animals shall not cause frequent or long continued noise.

  In all of these examples, the determination of violation is based on subjective assessment thereby precluding the scientific verification of the disturbing qualities of noise sources in a court of law. The potential for issuance of sustainable enforcement actions based on nuisance provisions is often in doubt.

However, nuisance criteria are useful for control of general noise sources and many activities associated with excessive noise in the community (e.g. street sales) for which quantitative regulations are not feasible. Further, they provide additional flexibility in controlling the less definable and infrequently occurring noise sources.

- *Quantitative legislation* – Noise regulations incorporating acoustical criteria are referred to as performance standards. Such standards specify permissable sound levels which if exceeded are in violation of the regulations and subject to enforcement action. Performance standards have been included in the following types of legislative provisions:

Source regulation – These regulations are directed at the control of noise from specific problem noise sources or classes of products such as motor vehicles, construction equipment, and recreational vehicles. Often performance standards are promulgated for both the sale and operation of sources. The first type, which may be subject to preemption by Federal regulations, is enforceable at the point of sale and requires manufacturer compliance. The second type is designed to control noise emissions by the product in-use. The following is an example of in-use regulations applicable to motor vehicles:

> No person shall operate a motor vehicle on the public right of way within the speed limits specified in this regulation at any time or under any condition of grade, load acceleration or deceleration in such a manner as to exceed the following noise levels for the category of motor vehicles . . .

These vehicular regulations are supported by well defined measurement methodologies usually placing the microphone at a point of 50 feet from the center of the lane of travel to be measured. The acoustical criteria specified vary according to the speed of the vehicle with higher maximum permissable levels for speeds greater than 35 mph.

Land-use/zoning provisions – Incorporation of performance standards in land-use planning provisions may be used to ensure that no new residences, institutions, or recreational areas are constructed in high noise areas. Conversely, these provisions may be used to ensure that no new noise producing structures, such as industrial and manufacturing plants, airports, and highways may be constructed in noise sensitive zones.

In some instances, municipal officials instituting land-use controls may recommend the placement of an environmental buffer zone if it is determined that resultant ambient levels will exceed sound level limits and therefore be deleterious to the health and welfare of citizens within existing developments. The buffer zone may serve as a means of noise attenuation by increasing distance between the noise source and the receiver. Therefore, it is often necessary to land-use planners to have a basic understanding of acoustics and its associated terminology. Many municipal zoning laws designate noise sensitive zones and require noise analyses prior to zoning approvals.

Within zoning provisions, maximum sound values are specified for the regulation of noise crossing property lines. Sound levels are usually measured at the boundaries of the property lot. In districts zoned for manufacturing, noise is measured at district boundaries. Decibel limits are often specified in octave bands for the various types of districts with correction factors for the intermittency of the noise, impulse noises, pure tones, and the time of day. The most common performance criteria used is dB(A), measured on the "A" weighting of a sound level meter.

In controlling property line noise it is important to determine whether the existing land-use/zoning code accurately reflects the actual use of the land. If there are numerous discrepancies between the way the land is zoned and the way it is actually used (e.g. commercial establishments in a residential zone), or if there are large tracts of unzoned land, then greater protection for impacted properties is provided by property line limits based on land-*use*.

Building codes – Inclusion of acoustical criteria in building codes is designed to prevent the intrusion of exterior noise sources beyond prescribed levels into noise sensitive structures. In some cases, performance regulations establishing uniform minimum noise insulation standards are promulgated which may be enforced through issuance of building permits.

To determine the types of legislative provisions which provided the statutory basis for State and municipal noise control activities, survey respondents were requested to enclose a copy of their noise control legislation.

DATA LIMITATIONS AND ANALYTICAL CONSTRAINTS

- A significant percentage of the States and many municipal respondents did not provide copies of their legislation. In order to gain a perspective of the types of State noise control statutes in effect in 1973, it was necessary to supplement the survey information with data available to EPA from other sources. However, the number of municipalities with noise control ordinances are under-represented in the results presented.

- Although the types of legislative provisions adopted by States and municipalities were analyzed for this report, the types of acoustical criteria used, the sound level limits specified, and the measurement methodologies associated with State and municipal noise control legislation are not described in detail. However, a detailed summary of State and local noise source regulations stipulating specific decibel levels is compiled in the EPA document, *Noise Source Regulation in State and Local Noise Ordinances.*[1]

- While not specifically requested in the survey questionnaire, three States and 14 municipalities provided copies of proposed noise control legislation. These proposed statutes are discussed in the survey results. However, they represent only a limited sample of the legislation which was being proposed in 1973 by States and municipal governments.

RESULTS AND DISCUSSION

Table 3 summarizes the types of State noise control legislation enacted prior to January 1, 1974. The number of States that had adopted each type of legislative provision is shown as a function of the stage of program development. Table 4 uses a similar format to describe the noise control legislation submitted by responding municipalities. Table 5 delineates the types of legislative provisions proposed by municipalities in 1973.

The survey results support the following overall observations:

- *Approximately two-thirds of the State respondents had enacted noise control legislation.* Thirty-one of the 46 States that responded to the survey had legislation which incorporated noise related provisions. Fourteen States had enabling legislation in effect in 1973 which delegated the authority necessary to initiate a noise control program. Five of these States had enacted general environmental statutes in which noise was listed as one among many pollutants. Nine had specific enabling legislation for noise often providing a clearer and more immediate mandate for the initiation of noise control activities than did more general enabling statutes.

  While 20 States had adopted legislation including acoustical criteria, most frequently, such provisions were directed at the control of noise emission from one category of noise sources rather than emphasizing a comprehensive noise control approach. Recreational vehicles (almost exclusively snowmobiles) and motor vehicles (including all categories) were the sources most often regulated at the State level. In-use performance standards for motor vehicles had been promulgated with greater frequency than those applicable to the sale of such sources. Acoustical criteria relating to land-use/zoning controls had been adopted by only three States, two with established noise control programs. This is consistent with the local nature of zoning determinations. The only other legislative area where a significant number of States had included noise considerations was related to the maintenance and operation of motor vehicle exhaust systems.

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[1] *Noise Source Regulation in State and Local Noise Ordinances,* EPA Document 550/9-75-020 (February 1975).

TABLE 3
STATE NOISE CONTROL LEGISLATION AS A FUNCTION OF THE STAGE OF DEVELOPMENT[a]

Type of legislative provisions	Number of States with each type of provision				
	Stage of program development				Total
	Established program	Limited program	Minimal activities	No program effort	
Enabling legislation	3	5	6	0	14
General environmental statutes	0	3	2	0	5
Specific noise statutes	3	2	4	0	9
Legislation including acoustical criteria	3	6	7	4	20
Motor vehicle	2	4	3	1	10
Sale	1	1	1	1	4
Operation	2	3	3	1	9
Accessory equipment (sirens, exhaust)	1	1	0	0	2
Recreational vehicles	2	3	4	3	12
Sale	1	2	3	2	8
Operation	2	3	1	1	7
Land use, zoning	2	0	1	0	3
Other[b]	2	0	1	0	3
Legislation not including acoustical criteria	2	2	4	6	14
Motor vehicle exhaust systems	2	1	3	5	11
Other[c]	0	1	1	1	3
Number with noise control legislation	3	8	13	7	31
Total number of State respondents	3	9	20	14	46
Percent of respondents with legislation	100%	89%	65%	50%	67%

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[a] The legislative provisions cited are those which had been enacted prior to January 1, 1974 Copies of legislation submitted by States responding to the survey have been supplemented by information available to EPA from a variety of other sources.

[b] Includes aircraft/airports, farm/industrial vehicles, and wilderness areas regulations.

[c] Includes general nuisance regulation, anti-pollution projects act, and tax exemption provisions for property to reduce noise.

TABLE 4
MUNICIPAL NOISE CONTROL LEGISLATION AS A FUNCTION OF THE STAGE OF DEVELOPMENT[a]

Type of legislative provisions	Number of municipalities with each type of provision				
	Stage of program development				Total
	Established program	Limited program	Minimal activities	No program effort	
Nuisance legislation	7	11	49	10	77
Legislation including acoustical criteria	9	11	21	5	46
Land use, zoning	8	10	16	4	38
Motor vehicle	6	2	2	0	10
Construction equipment	4	2	0	0	6
Industrial equipment	4	0	2	0	6
Other[b]	6	3	3	2	14
Number providing copies of legislation	9	14	55	13	91
Percent of above with acoustical legislation	100%	79%	38%	38%	51%

[a] The legislative provisions cited are those which had been enacted prior to January 1, 1974.

[b] Includes snowmobiles, recreational vehicles, aircraft operations, refuse compactor vehicles, watercraft, sound reproduction and amplification equipment, and agricultural equipment.

As shown in Table 3, the relative percentage of States with noise control legislation increased as the stage of program development became more advanced. However, of the 46 State Respondents, over 60 percent reported a program orientation which included revision or expansion of noise control statutes encompassing States from all development categories. With few exceptions, States that had enabling legislation in effect in 1973 reported this program orientation and were moving to promulgate regulations covering additional noise sources. These findings are consistent with the heightened level of State noise control activity noteable in other survey areas.

- *At least two-thirds of the responding municipalities had noise control legislation in effect in 1973.* Fifty percent of the municipal respondents provided copies of their noise legislation. An additional 15 percent made reference in their questionnaire response to noise regulations that were in effect within their respective

TABLE 5
PROPOSED MUNICIPAL NOISE CONTROL LEGISLATION AS A FUNCTION OF THE STAGE OF DEVELOPMENT[a]

Type of legislative provision	Number of municipalities proposing each type of provision			
	Stage of program development			Total
	Limited program	Minimal activities	No program effort	
Nuisance legislation	1	1	4	6
Legislation including acoustical criteria	2	6	4	12
Land use, zoning	2	5	4	11
Motor vehicle	1	4	4	9
Construction equipment	1	2	2	5
Industrial equipment	2	1	1	4
Other	2	3	4	9
Number providing copies of proposed legislation	3	5	5	14

[a] The legislative provisions cited above were being proposed by municipalities in 1973. Only those municipalities which provided copies of proposed legislation are included.

municipal codes or zoning laws. While it could not be conclusively determined whether or not the remaining municipalities had legislation which included noise considerations, it is probable that most of these had nuisance statutes. The number of municipalities cited below with the various types of legislative provisions is based solely on those that submitted copies of their statutes.

- *Nusiance criteria is the predominate type of legislative provision at the municipal level.* Over 80 percent of the municipalities that provided copies of their legislation had nuisance provisions. While nonquantitative regulations are extremely difficult to enforce, they are useful as a supplement to performance standards and in the control of less definable noise sources and activities. However, the degree to which noise control efforts based exclusively on a nuisance approach are effective in protecting public health and welfare is dependent upon other parameters of a noise control program such as public education, training, and enforcement.

As shown in Table 4, almost 80 percent of the municipalities with structured programs that provided copies of legislation included nuisance criteria within their noise control ordinances. With few exceptions, municipalities with established or limited programs used nuisance provisions to supplement performance standards. However, 62 percent of those municipalities that conducted minimal activities and included copies of their statutes relied exclusively on nuisance criteria to abate noise. The degree of enforcement was therefore limited since enforcement was dependent upon subjective interpretation as to what constituted excessive or disturbing noise. Ten municipalities with no program effort in 1973 had nuisance provisions within their city codes. Even though these municipalities had specified noise control legislation, enforcement actions were not instituted since funds were not budgeted for noise control activities.

Memphis, Tennessee provides an example of an effective enforcement program based on nuisance criteria which prohibits horn blowing and noisy mufflers. However, the Chicago Department of Environmental Control has had difficulty upholding nuisance provisions in court due to a lack of sufficient evidence.

- *Land-use/zoning codes incorporating performance standards were the most frequently cited types of legislative provisions containing acoustical criteria.* Thirty-eight of the 46 municipalities with legislation including quantitative regulations had land-use/zoning controls. The relative prevalence of this type of noise control legislation at the municipal level reflects the fact that zoning has traditionally been a local function. Further, such legislation provides an effective planning technique to limit further concentration of noise sources and impact on the population. Noise responsive land-use planning is a major facet of the California noise control program. This is reflected in the fact that all of the 10 California municipalities with quantitative legislation in 1973 had adopted performance standards for land-use/zoning controls.

  Further, all but two of those municipalities with established or limited programs and that provided copies of their legislation had enacted land-use/zoning provisions. Sixteen municipalities that carried out minimal activities in 1973 and four that had instituted no program efforts had promulgated this type of legislative provision on which to base expanded noise control activities.

- *A significant number of municipalities had adopted source regulations in 1973.* Motor vehicle noise control regulations were the most often cited noise source legislative provisions in municipal ordinances followed by regulation of construction equipment and industrial noise sources. Ten municipalities were known to have adopted performance standards for motor vehicles. Noise emissions of automobiles, trucks, buses, and motorcycles affect the greatest number of people in the urban and suburban environment due to the proximity of residences to streets and highways. Six municipalities had promulgated regulations for construction equipment and six had adopted performance standards for industrial noise sources. Cited regulations had been instituted for the most part in the larger metropolitan areas where large industrial complexes and construction activities were widespread. The most frequently identified industrial noise regulation was applicable to commercial air conditioners. Regulation of construction equipment and activities at the municipal level contrasted sharply with State involvement. In 1973, there were no State regulations in effect for this category of noise sources.

The largest percentage of noise source regulations had been adopted by those municipalities with established or limited programs. Municipalities in these stages of program development also had the most comprehensive noise control ordinances including regulations of such additional sources as recreational vehicles, refuse compactor vehicles, watercraft, and sound reproduction and amplification equipment.

- *Many municipalities were proposing expanded and comprehensive noise control ordinances in 1973.* Although Table 5 includes only those municipalities that submitted copies of proposed legislation, it indicates that a substantial number of municipalities without quantitative standards in 1973 were drafting noise control statutes. Further, most of the proposed ordinances were extremely comprehensive including not only land-use/zoning provisions but regulations for a variety of noise sources.

NOTEWORTHY PROGRAM

The City Council of Chicago passed a comprehensive noise control ordinance in March 1971. In support of the new ordinance, public hearings were conducted by the Environmental Committee of the Chicago City Council. Testimony was provided by representatives from industry, conservation groups, environmental organizations, medical authorities and interested citizens. The ordinance incorporated recommendations by acoustical consultants in a report for the city on urban noise.

The Chicago ordinance is among the most comprehensive in the United States and has served as a model for numerous other States and municipalities. Manufacturers must certify that identified products sold in Chicago comply with the sound level limits specified in the ordinance. The user of the product must maintain it so as not to exceed manufacturers certified levels. Thus, any modifications to the regulated product which results in an increase in noise emissions are prohibited.

Table 6 lists regulations specifying dB(A) limits included in the Chicago ordinance. Noise from regulated products is measured in dB(A) at a distance of 50 feet. The compliance date in the listing is only for products manufactured after January 1, 1975, even though other compliance dates from 1971 through 1980 are frequently specified with decreasing levels for later dates. The following sound level limits should not be construed to represent EPA recommendations. They are cited as examples of performance standards adopted by one municipality in response to local conditions.

TABLE 6
PERFORMANCE STANDARDS IN THE CHICAGO NOISE ORDINANCE

Noise source	Noise limit by dB(A)
Motorcycles	84
Vehicles with gross weight over 8,000 lbs.	84
Cars, other motor vehicles	80
Construction and industrial equipment (including tractors, bulldozers, drills, loaders, power shovels, cranes, derricks, motor graders, paving machines, off highway trucks, ditchers, trenchers, compactors, scrapers, wagons, pavement breakers, compressors and pneumatic powered equipment)	86
Agricultural tractors and equipment	86
Powered commercial equipment 20 horsepower or less (for occasional use in residential areas)	84
Powered equipment in residential areas (for repeated use)	70
Snowmobiles	73
Dune buggies, all terrain vehicles, mini-bikes	73
Engine-powered boats	76

In terms of land use and zoning regulations, noises from building in the following districts are to be measured at the boundary of the lot and not-to-exceed the following limits:

Zoning areas	Noise limit by dB(A)
Business and commercial districts	62
Residential areas	55
Manufacturing districts	Limitations range from 55 to 61 dB(A)
Where manufacturing zoning boundaries meet business and commercial zoning boundaries	Range from 62 to 66 dB(A)

Vibrations that can be felt beyond the property line in any district is in violation of the ordinance.

The Chicago noise ordinance also includes nuisance provisions. Monetary as well as possible jail penalties for violations in terms of first offense and subsequent offenses in any 180 day period are specified.

ROLE OF EPA

The extensive technical assistance activities in the area of model legislation and enforcement guidance provided by EPA to States and municipalities are discussed in detail in Chapter 10. This section discusses EPA's noise regulatory authority and implementing actions.

While reasserting the primacy of State and local responsibility in the Noise Control Act, Congress determined that Federal action was essential to deal uniformly with major noise sources and other products distributed in commerce. Accordingly, under the Act, EPA was authorized to (1) establish noise emission standards for new products, (2) recommend aircraft noise measurement and emission regulations to the Federal Aviation Administration based on adequate protection of the public health and welfare, (3) label products on the basis of their noise attenuation or emission characteristics, and (4) promulgate noise emission regulations for rail and motor carriers engaged in interstate commerce. The degree of Federal preemption of State and local authority varies among each type of regulatory authority. However, States and municipalities may continue to adopt and enforce noise regulations not in conflict with those promulgated by EPA. States and their political subdivisions retain the authority (except in the case of interstate rail and motor carriers) to control environmental noise through regulating the use, operation, or movement of products.

Under Subsection 5(b) of the Noise Control Act, EPA was directed to identify products (or classes of products) that the Administrator judged to be major sources of noise and to report on the technology, cost, and alternative methods to control the noise emissions from these major sources. Identification of major noise sources is based on determination of the extensity of impact (number of people impacted) and the intensity or severity of individual impact (measured in terms of the environmental noise levels.) The first "Identification of Major Sources of Noise" report was published in the *Federal Register* on June 21, 1974. New medium and heavy duty trucks and portable air compressors were identified as major noise sources. The second identification document was published on May 28, 1975 and identified motorcycles, buses, wheel and truck loaders and wheel and track dozers, truck transport refrigeration units, and truck mounted solid-waste compactors as major noise sources. Additionally, technical and cost data is being studied for light trucks, motorboats, chain saws, tires, pneumatic and hydraulic tools, pile drivers, lawn care equipment, and other special auxiliary equipment on trucks.

Following identification of a major noise source, EPA is required to promulgate regulations incorporating noise emission standards applicable to the sale of the product if standards are feasible or require labelling of the product's noise emission characteristics to provide information for the purchaser. Section 6 of the Noise Control Act identifies four primary categories of new products to be considered for regulation. These are construction equipment, transportation equipment, any motor or engine, and electrical or elctronic equipment. Section 6 regulations are to be based on protection of the public health and welfare, the degree of noise reduction achievable through application of the best available technology, and the cost of compliance.

The EPA regulation for portable air compressors were issued in early 1976. It is anticipated that proposed regulations for previously identified major noise sources will be forthcoming. Once these regulations become effective, the manufacturer must conform to their provisions at the time of sale. Further, the responsibility for testing to determine compliance rests with the manufacturer. However, EPA enforcement officials may observe required tests, and inspect records and production facilities to insure that established standards are met. An EPA testing facility in Sandusky, Ohio has been established for the study of noise emissions by new products and determination of appropriate regulatory actions and testing procedures.

State and local laws which regulate the noise levels of an EPA-regulated new product and which, at any time, impact the manufacturer of the product are preempted. However, States and municipalities may regulate the product noise impact through regulations enforceable against the owner or operator of the product, for example, by providing maximum noise levels for operation, curfews on operation, prohibition of use in a residential neighborhood or hospital zone, or requirements for periodic inspection and licensing of the product. To achieve the maximum benefits of EPA regulatory actions, complementary State and local in-use regulatory and enforcement actions are essential.

Under Sections 17 and 18 of the Act, EPA was required to promulgate regulations for surface carriers engaged in interstate commerce. These regulations were to incorporate noise emission standards based on best available technology taking into account the cost of compliance. Federal regulations for the operation of interstate motor carriers were issued in October, 1974 and became effective on October 15, 1975. Regulations for interstate rail carriers were issued in early 1976 and will become effective 12 months after issuance. Responsibility for enforcement of the interstate carrier regulations rests with the Bureau of Motor Carrier Safety under the Department of Transportation.

The preemptive coverage of the interstate carrier regulations is broader than that of new product regulations. After the effective date of an EPA regulation applicable to noise emissions from interstate rail or motor carriers, no State or local government may adopt or enforce any standard applicable to the same noise source unless such standard is identical to the Federal standard unless necessitated by special local conditions. However, determination that a local law is necessitated by special local conditions must be made by the EPA Administrator, after consultation with the Secretary of the Department of Transportation, and such local law must not be in conflict with the EPA regulations. EPA encourages State and local jurisdictions employing identical standards to act as independent enforcement agencies to attain the full benefits from the interstate carrier regulations as well as all new product regulations.

CHAPTER 5

STATE AND MUNICIPAL AGENCIES RESPONSIBLE FOR NOISE CONTROL EFFORTS

The designation by a State or municipality of an agency as the responsible organization for noise control connotes, at the very least, a recognition of noise as a significant problem. For States and municipalities that have initiated minimal activities, the identification of a responsible organizational unit provides a focal point where complaints may be made and a nucleus from which to develop a comprehensive noise control program. To a larger extent, the jurisdiction of the responsible agency determines the overall orientation of noise related activities. Further, the agency's principal functions affect the types of expertise applied to the solution of noise problems.

Where more than one State or municipal agency is involved, responsibility either may be fragmented or functionally divided. A fragmented approach is characterized by ill-defined spheres of responsibility and inadequate coordination among participating agencies. Under a functional approach, authority for various facets of the noise program is allocated (usually by statute) among agencies with related responsibilities. For example, development of noise criteria and standards may be the province of the Environmental Services Department, enforcement of vehicular noise regulations assigned to the Highway Patrol, and consideration of the noise impact of land-use controls undertaken by the agency responsible for planning and development activities. To be fully effective, a functional approach must incorporate coordination and consultation mechanisms. Fragmentation of authority undermines noise control efforts; program effectiveness may be enhanced under a functional arrangement.

States and municipalities were requested to indicate the title of the organizational unit responsible for their noise program.

DATE LIMITATIONS AND ANALYTICAL CONSTRAINTS

The survey data may not present a true picture of the number of agencies involved due to the following considerations:

- Several State and municipalities appear to have listed only those organizational units with *primary* responsibility for noise control efforts.

- In some cases, the questionnaire was completed by the administrative office of the State or municipal government rather than the organizational unit which conducts noise activities. This was particularly true for those States and municipalities that did not have structured noise control programs. Therefore, some participating agencies may not have been canvassed by the respondent.

- Where the involvement of two or more agencies was cited by a State or municipality, a description of the mechanisms for and the extend of coordination among involved organizations was not usually included. However, in most cases, the overall context of the response allowed a determination of whether responsibility was fragmented or functionally divided among participating agencies.

RESULTS AND DISCUSSION

Table 7 lists in rank order the types of responsible agencies most frequently cited by responding States and municipalities. A more detailed agency breakdown by the stage of program development is shown for States in Table 8 and for municipalities in Table 9. The figures include the responsible agencies reported by the 32 States and 128 municipalities with established or limited programs, or that carried out minimal activities. Several States and municipalities with no noise program efforts in 1973 nonetheless identified responsible agencies. These have not been included in the tables as agency involvement was usually limited to responding to information requests, and, in several cases, to initial planning and design of a proposed noise control program. The tabulated figures include two or more entries for the three States and six municipalities that reported the participation of more than one agency. Appendix B provides a list of the designated contact, title, and address of each agency involved in noise activities as specified by responding States and municipalities.

The survey results support the following observations:

- *An increasing number of States and municipalities have a designated agency responsible for noise control activities.* All of the responding States and municipalities with established or limited programs, or that carried out minimal activities, had delegated authority to an agency to conduct noise control efforts. This constitutes 70 percent of the total number of survey respondents. Of the remaining 14 States and 55 municipalities reporting no program efforts in 1973, seven States and 25 municipalities had proposed programs slated for 1974 including designation of an agency.

  In contrast, approximately one-half of the States and municipalities surveyed in 1971 did not have an agency responsible for noise programs. The *Report to the President and Congress on Noise* concluded that "Of those cities and States that do have some type of program, responsibility for these programs is fragmented throughout several agencies." This increase over a 2-year period reflects the growing awareness of noise as a significant environmental problem by States and municipalities.

TABLE 7
STATE AND MUNICIPAL AGENCIES RESPONSIBLE FOR NOISE CONTROL ACTIVITIES

Responsible agency	State	Municipal	Total
Public Health Department	17	27	44
Environmental Services	14	24	38
Police Department	3	31	34
Planning and Development	1	19	20
Building Department	–	12	12
General State or municipal government	–	10	10
Other[a]	2	11	13

[a] Other responsible agencies:
State – Department of Transportation
Municipal – Departments of Safety, Engineering, Public Works/Services, and Zoning

TABLE 8
RESPONSIBLE STATE AGENCIES AS A FUNCTION OF STAGE OF PROGRAM DEVELOPMENT[a]

Responsible agency	Stage of program development			Total
	Established	Limited	Minimal activities	
Public Health	2	2	13	17
Environmental Services	1	8	5	14
Police Department[b]	1	1	1	3
Transportation	1	1	–	2
Planning and Development	–	–	1	1

[a] Figures include two or more entries for following States:
California – Health, Transportation, Police Departments
Connecticut – Environmental Services, Transportation Departments
Michigan – Environmental Services, Health, Police Departments

[b] Category includes Highway Patrol, Department of Motor Vehicles.

TABLE 9
RESPONSIBLE MUNICIPAL AGENCIES AS A FUNCTION OF STAGE OF PROGRAM DEVELOPMENT[a]

Responsible agency	Stage of program development			Total
	Established	Limited	Minimal activities	
Police Department	1	–	30	31
Public Health Department	1	7	19	27
Environmental Services	7	6	11	24
Planning and Development	2	8	9	19
Building Department	1	2	9	12
General Municipal Government	–	1	9	10
Public Works/Services	–	–	4	4
Safety Department	1	–	2	3
Zoning Department	–	–	2	2
Engineering Department	–	1	1	2

[a] Figures include two or more entries for following municipalities:

Los Angeles, California – Environmental Services, Police, Building Departments

Phoenix, Arizona – Police, Building Departments

Atlanta, Georgia – Police, Building Departments

Tulsa, Oklahoma – Health, Police Departments

Pawtucket, Rhode Island – Engineering, Police Departments

El Paso, Texas – Health, Police Departments

- *With few exceptions, State noise control activities are the responsibility of either the public health department or the environmental services agency.* Forty-six percent of the identified State agencies were public health departments while a slightly smaller percentage were environmental services agencies. Of the six agencies which did not fall into these two categories, four were reported by States with functionally structured noise programs which included involvement by either the health or environmental services agencies.

- *The allocation of responsible agencies among municipalities is more varied.* As shown in Table 9, the municipal mix of agencies was comprised of 10 categories. The police department was the responsible agency most frequently cited by responding municipalities. However, with one exception, municipalities reporting the participation of the police department undertook minimal activities. For those municipalities with established or limited programs, responsibility was most frequently designated to the environmental services department, the planning and development agency, and the public health department. Six municipalities reported the involvement of more than one agency. Based on the stage of program development, the majority of these municipalities had fragmented rather than functionally divided agency responsibilities.

  The greater diversity at the municipal level may be attributable to institutional arrangements which differ between the State and local levels of government. The degree of program development also appears to be a factor. The responsible agencies reported by municipalities that conducted minimal activities in 1973 encompassed all 10 categories. Most frequently, responsibility was assigned to the police department or administratively delegated to various municipal offices staffed by personnel who often lacked acoustical training but who have worked in some related area (e.g., engineering, safety, industrial hygiene). The responsible agencies of those municipalities with more structured programs were often defined by statute and were concentrated in three categories.

- *The health department was the agency most often identified by the total number of State and municipal respondents.* Where responsibility for environmental noise control is lodged with the health department, this often reflects a determination that noise poses a hazard to the public health and welfare. This placement may also be attributable to prior involvement in occupational noise control, thereby allowing application of personnel with some degree of training or expertise in acoustics. The greatest number of States and municipalities identifying the health department as the responsible agency for noise activities were those that conducted minimal activities.

- *A comparison with the 1971 survey indicates an increase in the relative prevalence of environmental services agencies as opposed to health departments.* This trend is more discernible at the municipal level than at the State. The majority of States and municipalities citing the environmental services agency fall into the structured categories of established and limited noise programs. Many of these (e.g., New York, Illinois, New Jersey, New York City, Chicago) had enabling legislation which specifically defined the powers and duties of the environmental services agency. The environmental orientation of many State and municipal noise control efforts is not fully reflected in the tables as some States and muncipalities carry out environmental programs under the aegis of the health department. It appears that in many instances noise program organization is based on the prior placement of other environmental areas (e.g., air quality). The inclusion of noise within the overall environmental framework facilitates intermedia pollution treatment and may result in greater consideration of noise as a result of the environmental impact statement process. Additionally, it may foster the application of highly skilled personnel with related areas of expertise to noise problems.

Where authority for the administrative and technical aspects of the noise control program is vested in either the health department or the environmental services agency, complementary enforcement actions instituted under structured programs may be the responsibility of either the same agency or a separate enforcement organization. The latter case is exemplified in noise programs where enforcement functions are carried out by the police department or highway patrol. Separation of the technical and enforcement components of a noise control program may result from legal and constitutional requirements unless specific authority is delegated by the legislature to carry out such enforcement activities as inspections and issuance of violations. However, if technical and enforcement functions are divided among agencies, a sustained level of coordination is necessary and training of enforcement personnel in noise measurement techniques is required to assure program effectiveness.

- *There is a relationship between the type of responsible agency and noise control approach and orientation.* For instance, 14 municipalities reported involvement by either the building or zoning department. Ten of these municipalities submitted copies of their noise control legislation, nine of which had adopted zoning provisions incorporating acoustical provisions. The exception was Atlanta, Georgia, where noise control activities of both the Police and Building Departments were based on implementation of nuisance legislation.

  Of the 25 municipalities where noise control efforts were the responsibility of the police department alone, 16 made reference to or provided copies of their noise statutes. All of these operated under nuisance legislation except Madison, Wisconsin, which had acoustical zoning provisions and a proposed comprehensive noise control ordinance in 1973. It seems reasonable to infer that the remaining nine municipalities also had non-quantitative statutes. There program orientation primarily involved investigation of noise complaints and limited enforcement activity.

Half of the municipalities where noise control was the function of the general municipal government reported program efforts which included development or expansion of noise control legislation. This is consistent with the administrative and policy-making orientation of these organizations.

Over 50 percent of the responding California municipalities conducted noise related activities under the aegis of agencies charged with the land-use planning and development functions (zoning, development, planning and inspection agencies). This appears to reflect the impact of State planning law.

NOTEWORTHY PROGRAMS

Several States and municipalities have established separate noise divisions as their noise control efforts have expanded. A total of nine States and six municipalities reported the existence of separate noise offices or divisions responsible for their noise control programs. The States of Pennsylvania, Illinois, New Jersey, New York, Florida, and Oregon have separate noise divisions within the State department of environmental services while the noise offices of California, Hawaii, and South Carolina are under the jurisdiction of the public health department. New York City, Los Angeles, San Diego, and Chicago have separate noise offices housed within the municipal environmental services agency. Baltimore and Nassau County, New York have similar organizational arrangements within the health department.

The involvement of numerous organizational units in California represents a sophisticated functional division of responsibility and appears to facilitate the application of expert personnel to appropriate aspects of the California program. The Office of Noise Control under the California Department of Health is charged with providing assistance to State and local agencies under the California Noise Control Act of 1973. The State Department of Transportation (Highways) conducts the multimillion dollar school noise attenuation program as well as research on transportation noise and preparation of environmental impact statements. The Division of Aeronautics under the Department of Transportation administers "Noise Standards for California Airports." The Department of Highway Patrol is responsible for the enforcement of noise standards for vehicles operating on highways and new vehicles for sale.

ROLE OF EPA

The fact that the majority of States and municipalities responding to the survey have designated a responsible agency for noise control should facilitate the delivery of EPA technical assistance and information and provide a basis for expanded interaction on the Federal, State, and municipal levels. Designation of a responsible agency and the delegation to that agency of the authority necessary to implement and enforce noise control legislation is a prerequisite to the establishment of an effective program. The model community noise control ordinance and model State enabling legislation developed by EPA include detailed provisions enumerating the powers and duties of the designated noise control agency.

CHAPTER 6

STATE AND MUNICIPAL NOISE BUDGETARY ALLOCATIONS

Adequate funding is crucial to the development and implementation of an effective noise control program. Without initial appropriations to get a new program off the ground once legislation is enacted, and without a sustained level of funding to operate the program once initial standards, criteria, and administrative procedures have been established, noise control efforts will be undermined. The amount of funds required to mount an effective noise control program varies depending upon (1) the size of the jurisdiction, (2) the types and magnitude of noise problems, and (3) the comprehensiveness of program orientation. Given limited State and municipal resources and competing demands for funds, noise budget allocations are indicative of State and municipal awareness of noise as a serious environmental problem.

For the 1974 survey, States and municipalities were requested to provide a breakdown of budget allocations specifically designated for noise control. Both calendar year 1973 expenditures and projections for 1974 and 1975 were included. The questionnaire incorporated a budgetary data format under which man hours and total program cost for each of the 3 years were to be broken down into six functional areas. These were supervisory, engineering, technical, enforcement, legal, and clerical. However, States and municipalities were encouraged to use an alternative format if this would provide more meaningful data.

DATA LIMITATIONS AND ANALYTICAL CONSTRAINTS

Comparisons of reported budget data are restricted by the following factors:

- Cost accounting procedures differ, and in many instances, responding States and municipalities did not adequately qualify and identify fiscal data, thereby making interpretation of the figures difficult.

- In several cases, States and municipalities in their responses to other questions indicated that they carried out noise control activities but did not provide budgetary data. Very often, noise was not a separately funded budget element. Therefore, the figures were difficult to breakdown. As a result, *the aggregate reported budgetary allocations may constitute a lower bound of State and municipal noise control funding.*

- Reported budgetary data did not always provide a realistic picture of the extent of noise control efforts. States and municipalities that undertook minimal activities in some instances reported expenditures comparable to those with established or limited programs.

- Another imprecision in the data results from the calculation of budget figures on the basis of the percentage of time spent by personnel on noise related activities. In particular, 1974 and 1975 projections calculated by this method are somewhat tenuous as the actual time spent by part-time personnel may vary significantly from year to year depending upon the number of noise complaints received, the priority attached to noise in relation to other functions for which the individual is responsible, and a number of other considerations.

RESULTS AND DISCUSSION

Budget information for 1973 was provided by 16 States and 46 municipalities. This constitutes respectively 35 percent and 25 percent of responding States and municipalities. Projections of anticipated appropriations for noise control were received from 18 States and 46 municipalities for 1974, and from 16 States and 40 municipalities for 1975. A total of 20 States and 53 municipalities submitted budgetary data for one or more years. As some of the States and municipalities did not report budget information for all 3 years, the composition of States and municipalities providing data differs for each year.

Table 10 lists in rank order by per capita expenditures those 16 States that provided information on 1973 noise control funding. Per capita expenditure in cents is based on 1970 census figures and is used as a comparative indice as it is standardized for population. Where fiscal data was submitted, projected 1974 and 1975 per capita expenditures and associated rank orders are shown to indicate changes over the 3-year reporting period. Similar information is presented in Table 11 for those 46 municipalities reporting 1973 expenditures for noise activities. Three States, the Virgin Islands, and seven municipalities reported no budget in 1973 but submitted projected allocations for 1974 and/or 1975. These figures are shown in Table 12. In several instances, the data represent estimates of needs for proposed noise control activities the appropriation of which is dependent upon a number of political and economic factors.

Figures 8, 9 and 10 use per capita expenditures to depict the distribution of reported funding for noise control across the nation. Figure 8 includes expenditures for 1973 reported by both States and municipalities. Figures 9 and 10 respectively portray projected 1974 and 1975 State per capita allocations. In those instances where 1974 or 1975 State projections were not provided, the per capita figures shown in Figures 9 and 10 assume the same level of funding as that for the latest year for which data was reported.

TABLE 10
BUDGETARY ALLOCATIONS FROM RESPONDING STATES FOR NOISE CONTROL, 1973, AND PROJECTED 1974–1975

States	1970 Population	1973			1974		1975	
		Total expenditures	Per capita expenditures (in cents)	Rank order	Per capita expenditures (projected)	Rank order	Per capita expenditures (projected)	Rank order
California	19,953,134	12,348,797	61.89	1	68.20	1	NA	NA
Hawaii	769,913	56,491	7.34	2	7.66	2	9.01	1
Oregon	2,091,325	44,300	2.12	3	2.61	5	4.86	3
Illinois	11,113,976	200,000	1.80	4	3.02	3	3.67	5
New Jersey	7,168,164	89,879	1.25	5	.97	8	1.98	7
New York	18,241,266	147,763	.81	6	.98	7	NA	NA
Florida	6,789,443	45,000	.66	7	.91	9	1.68	9
South Carolina	2,590,516	16,800	.65	8	2.62	4	4.92	2
Massachusetts	5,689,170	23,800	.42	9	.88	10	1.79	8
Montana	694,409	2,000	.29	10	NA	NA	NA	NA
North Carolina	5,082,059	7,000	.14	11	.43	11	1.08	12
Louisiana	3,643,180	4,650	.13	12	.34	12	1.19	11
Kansas	2,249,071	1,925	.09	13	.09	13	4.62	4
Arizona	1,772,482	1,500	.08	14	.08	14	3.39	6
Oklahoma	2,559,253	1,000	.04	15	.04	15	.04	13
Nevada	488,738	127	.03	16	1.46	6	1.46	10

NA, not available.

TABLE 11
BUDGETARY EXPENDITURES FOR RESPONDING MUNICIPALITIES IN NOISE CONTROL, 1973 AND PROJECTED 1974–1975

Cities		1970 population	1973			1974			1975		
			Total expenditures	Per capita expenditures (in cents)	Rank orders	Total expenditures	Per capita expenditures (in cents)	Rank orders	Total expenditures	Per capita expenditures (in cents)	Rank orders
Ala:	Montgomery	133,000	560	0.4	36	3,060	2.2	26	3,000	2.2	26
Calif:	Downey	88,000	3,240	3.7	16	35,200	40.0	4	55,500	63.0	2
	Fresno	166,000	3,480	2.1	21	4,980	3.0	23	6,330	3.8	18
	Garden Grove	123,000	2,180	1.8	23	19,800	16.1	8	44,100	35.9	6
	Hayward	93,000	296	.3	41	13,352	14.4	10	NA	NA	
	Inglewood	90,000	51,400	57.1	1	51,400	57.1	3	51,400	57.1	3
	Lakewood	83,000	3,774	4.6	14	1,415	1.7	29	1,198	1.4	29
	Los Angeles	2,816,000	92,500	3.3	17	97,200	3.5	19	97,200	3.5	21
	Oakland	362,000	110	.03	46	5,824	1.6	30	NA	NA	
	Pasadena	113,000	1,277	1.1	27	3,795	3.4	21	3,930	3.5	20
	Santa Monica	88,000	13,750	15.6	7	7,880	9.0	14	22,770	25.9	8
	Torrance	135,000	23,478	17.3	6	23,478	17.3	7	52,400	38.8	5
Colo:	Aurora	75,000	39,030	52.0	2	43,700	58.3	2	59,450	79.3	1
	Colorado Springs	135,000	41,000	30.4	5	50,000	37.0	5	65,000	48.1	4
	Lakewood	93,000	31,042	33.4	4	68,677	73.9	1	NA	NA	
Conn:	Bridgeport	157,000	2,275	1.5	26	NA	NA		NA	NA	
Fla:	Miami	335,000	1,200	.4	39	1,400	.4	37	1,600	.5	31
	Jacksonville	529,000	1,015	.2	42	NA	NA		NA	NA	
	St. Petersburg	216,000	1,713	.8	32	6,770	3.1	22	7,120	3.3	22
	Tampa	278,000	2,746	1.0	28	2,746	1.0	33	NA	NA	
Ill:	Chicago	3,367,000	206,500	6.1	11	143,600	4.3	17	157,950	4.7	16
Ind:	Indianapolis	745,000	3,800	.5	35	NA	NA		NA	NA	
Mass:	Boston	641,000	31,000	4.8	13	36,938	5.8	16	NA	NA	

TABLE 11
BUDGETARY EXPENDITURES FOR RESPONDING MUNICIPALITIES IN NOISE CONTROL, 1973 AND PROJECTED 1974–1975––continued

Cities		1970 population	1973			1974			1975		
			Total expenditures	Per capita expenditures	Rank orders	Total expenditures	Per capita expenditures	Rank orders	Total expenditures	Per capita expenditures	Rank orders
Mich:	Flint	193,000	160	0.08	43	26,200	13.6	12	21,300	11.0	13
	Grand Rapids	197,000	10,000	5.0	12	20,000	10.2	13	40,000	20.3	9
	Kalamazoo	86,000	440	.5	34	2,950	3.4	20	2,150	2.5	24
	Saginaw	92,000	1,520	1.6	24	1,700	1.9	28	3,475	3.8	19
	Warren	179,000	85	.05	44	114	.06	38	220	.1	33
Minn:	Minneapolis	434,000	10,319	2.4	20	11,503	2.7	25	13,000	3.0	23
N.Y.:	Nassau County	1,428,080	41,290	3.0	18	41,829	3.0	24	109,401	7.7	14
	New York City	7,895,000	950,000	12.0	9	NA	NA	NA	NA	NA	
N.C.:	Charlotte	241,000	75	.03	45	75	.03	39	75	.03	34
Ohio:	Cincinnati	452,000	1,515	.3	40	3,375	.8	35	12,171[a]	16.0	11
Okla:	Oklahoma City	366,000	17,279	4.7	15	NA	NA		NA	NA	
	Tulsa	332,000	2,920	.9	30	3,480	1.0	32	4,800	1.5	28
Ore:	Portland	383,000	167,500	43.7	3	70,000	18.2	6	70,000	18.2	10
Pa:	Pittsburgh	520,000	42,000	8.0	10	74,000	14.2	11	76,000	14.6	12
S.C.:	Columbia	114,000	2,120	1.9	22	2,120	1.9	27	2,120	1.9	27
Tex:	Austin	251,000	3,750	1.5	25	15,100	6.0	15	19,090	7.6	15
	Houston	1,233,000	10,450	.9	31	14,770	1.2	31	28,570	2.3	25
	Pasadena	89,000	354	.4	37	373	.4	36	392	.4	32
	San Antonio	654,000	4,018	.6	33	4,765	.7	34	4,170	.6	30
Va:	Norfolk	308,000	1,200	.4	38	NA	NA		NA	NA	
Wisc:	Kenosha	79,000	700	.9	29	NA	NA		NA	NA	
	Milwaukee	434,000	12,298	2.8	19	16,315	3.8	18	18,000	4.3	17
Wash:	Seattle	531,000	66,000	12.4	8	80,221[a]	15.1	9	161,179[a]	30.4	7

[a] Dependent upon passage of noise proposal.

NA, not available.

TABLE 12
PROPOSED BUDGETARY EXPENDITURES FOR RESPONDING STATES AND MUNICIPALITIES IN 1974 AND 1975 *WITHOUT* A BUDGET FOR NOISE CONTROL IN 1973

Respondents	1970 population	1974		1975	
		Projected expenditures	Per capita expenditures (in cents)	Projected expenditures	Per capita expenditures (in cents)
States:					
Indiana	5,193,669	NA	NA	23,000	0.44
Kentucky	3,219,311	20,000	.62	20,000	.62
Ohio	10,652,017	1,844	0.02	NA	NA
Virgin Islands	62,468	1,840	2.94	4,571	7.31
Municipalities:					
Stockton, Calif.	109,963	26,488	24.08	27,816	25.29
Gary, Ind.	175,415	20,775	11.8	56,700	32.3
Baltimore, Md.	905,759	57,957	6.4	81,128	9.0
Kansas City, Mo.	507,330	65,000	12.8	70,000	13.8
Lincoln, Nebr.	149,518	5,000	3.3	10,000	6.7
New Rochelle, N.Y.	75,385	759	1.0	555	0.7
Cleveland, Ohio	750,879	71,351	9.5	174,145	23.2

NA, not available.

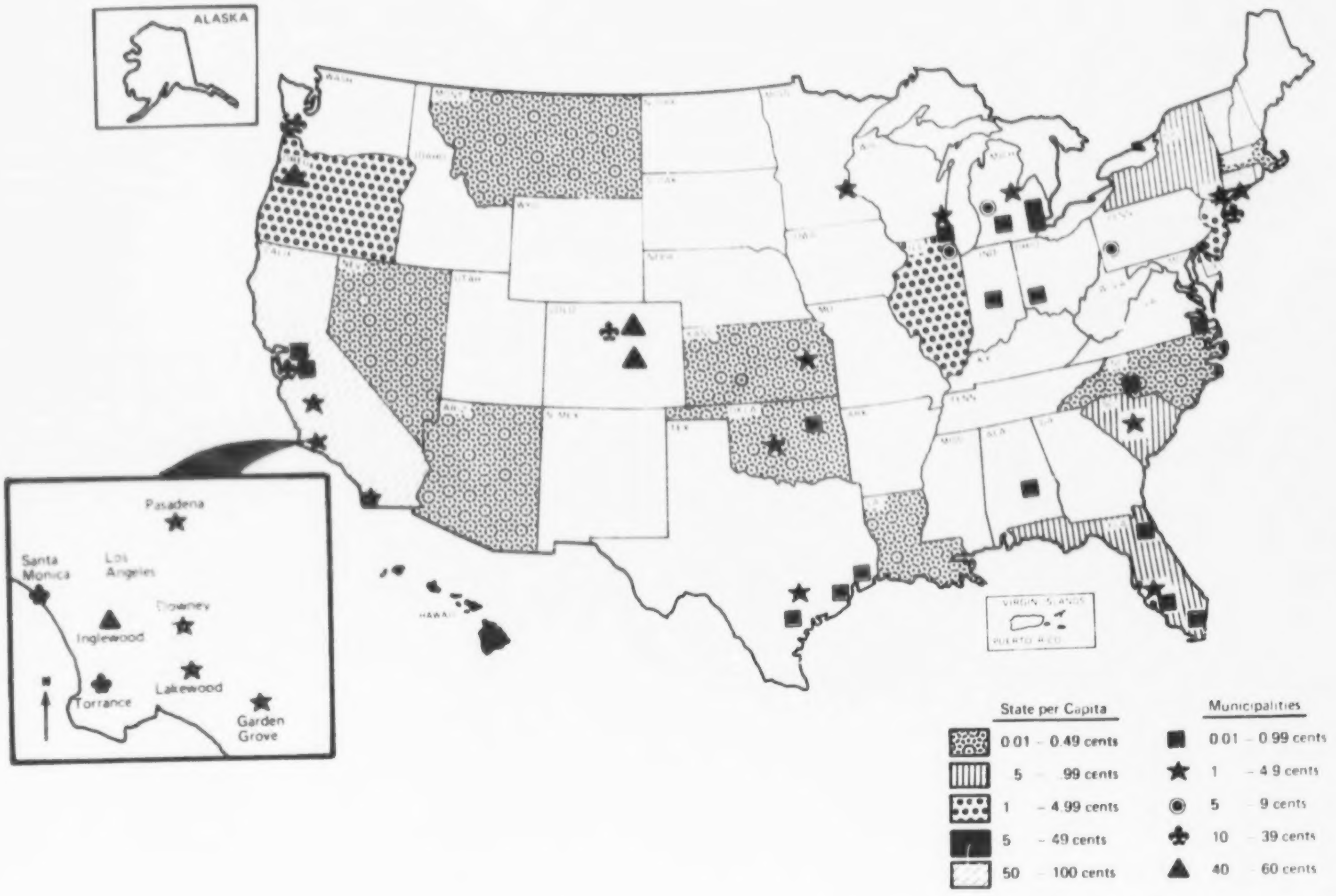
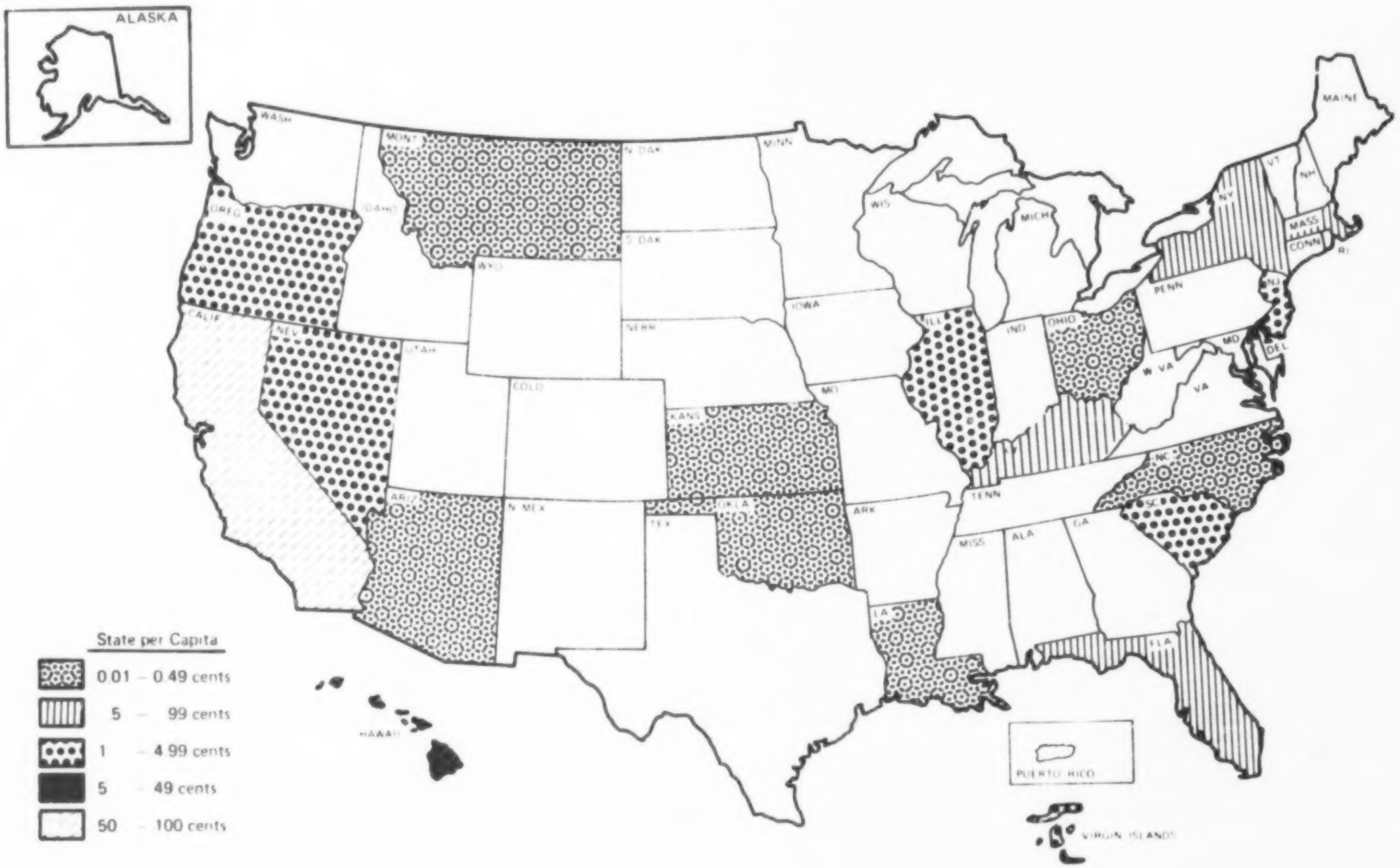

ALASKA
HAWAII
VIRGIN ISLANDS
PUERTO RICO
Pasadena
Santa Monica
Los Angeles
Downey
Inglewood
Torrance
Lakewood
Garden Grove
State per Capita
0.01 – 0.49 cents
.5 – .99 cents
1 – 4.99 cents
5 – 49 cents
50 – 100 cents
Municipalities
0.01 – 0.99 cents
1 – 4.9 cents
5 – 9 cents
10 – 39 cents
40 – 60 cents

Figure 8. 1973 State and municipal per capita budgetary expenditures in noise control


ALASKA
WASH
OREG
CALIF
IDAHO
NEV
MONT
WYO
UTAH
ARIZ
COLO
N MEX
N DAK
S DAK
NEBR
KANS
OKLA
TEX
MINN
IOWA
MO
ARK
LA
WIS
ILL
MICH
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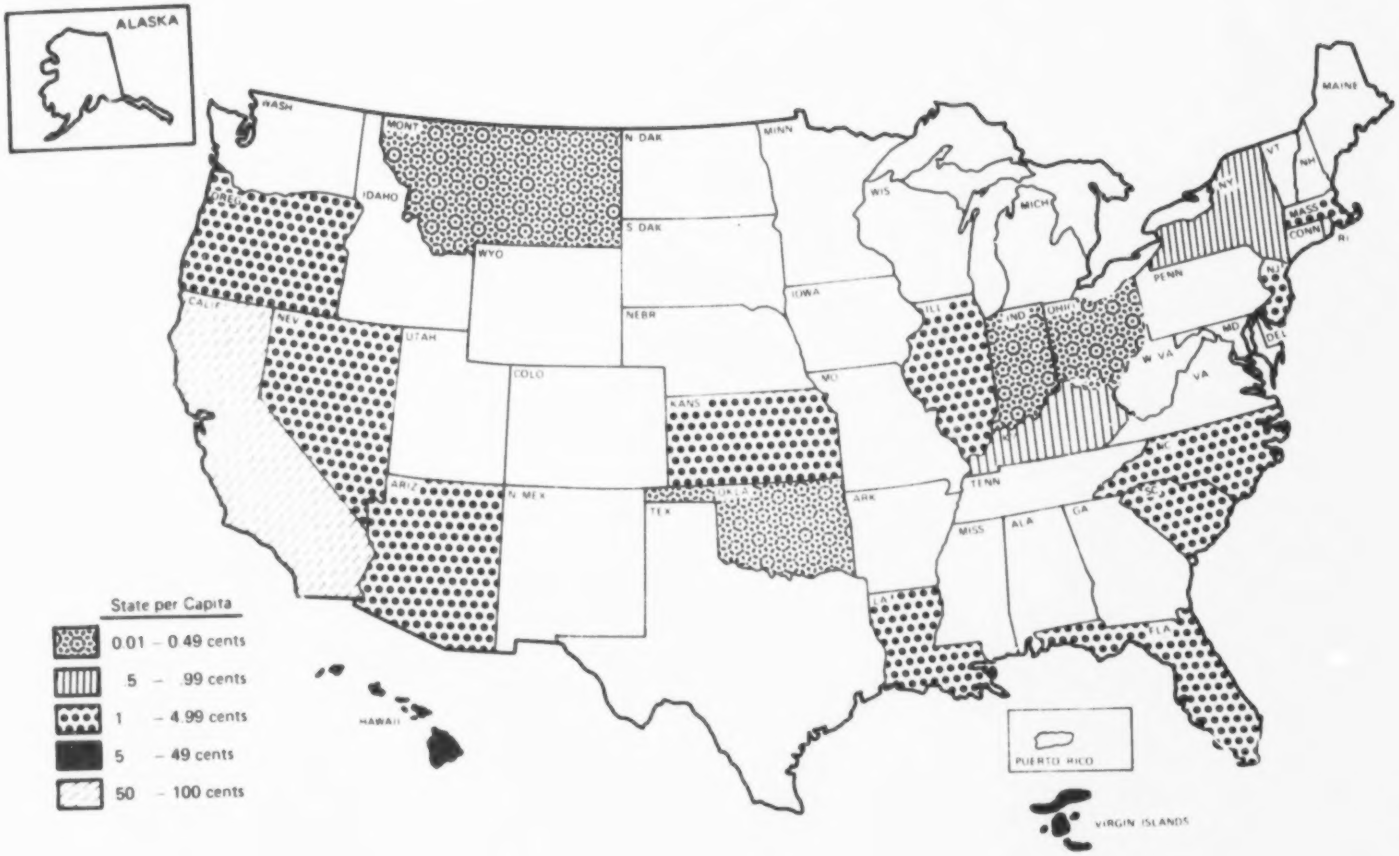
OHIO
KY
TENN
MISS
ALA
GA
FLA
SC
NC
VA
W VA
MD
DEL
NJ
PENN
NY
VT
NH
MAINE
MASS
CONN
RI
HAWAII
PUERTO RICO
VIRGIN ISLANDS
State per Capita
0.01 – 0.49 cents
5 – 99 cents
1 – 4.99 cents
5 – 49 cents
50 – 100 cents

Figure 9. Projected 1974 State per capita budgetary expenditures in noise control


ALASKA
WASH
OREG
CALIF
NEV
IDAHO
MONT
WYO
UTAH
ARIZ
COLO
N MEX
N DAK
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KANS
OKLA
TEX
MINN
IOWA
MO
ARK
LA
WIS
ILL
MICH
IND
OHIO
TENN
MISS
ALA
GA
FLA
SC
NC
VA
W VA
MD
DEL
NJ
PENN
NY
VT
NH
MAINE
MASS
CONN
RI
HAWAII
PUERTO RICO
VIRGIN ISLANDS
State per Capita
0.01 – 0.49 cents
.5 – .99 cents
1 – 4.99 cents
5 – 49 cents
50 – 100 cents

Figure 10. Projected 1975 State per capita budgetary expenditures in noise control

The survey results support the following observations:

- *Significant resources have been allocated by many States and municipalities for noise control activities.* The total reported State and municipal budget for noise control efforts and programs in 1973 was $14,907,834. Reported municipal spending accounted for $1,904,099 of this total while reported State expenditures were $13,003,735. However, if the State of California and its municipalities that reported 1973 expenditures are not included, the *1973 State and municipal budget is $2,324,522.* The allocation of scarce resources by many States and municipalities indicates a commitment to fulfill their primary responsibility for noise control.

- *There is an overall growth pattern in State and municipal noise control funding.* The survey results substantiate not only an increase in the number of States and municipalities allocating funds for noise control but also a growth in the amount of program expenditures. In 1973, only five States had per capita expenditures which exceeded 1.0 cent. In 1975, 15 States projected per capita allocations greater than 1.0 cent. Of the 39 municipalities that reported both 1973 expenditures and projections for one or more years, 82 percent anticipated increased noise funding over the 1973 level. The projected budgets of 19 municipalities had more than doubled.

  As shown in the tables, there is a distinction in budgetary allocations between established programs and those of States and municipalities proposing expanded noise control efforts. Generally, well-developed programs reflect a steady progression of funding allocations for the operation and refinement of existing noise control activities. Other States and municipalities without established programs in 1973 but proposing an expanded and structured effort, show a large scale increase in funding levels. This is exemplified by Seattle, Washington. In many cases, the large budgetary increases are contingent upon the enactment of legislation and the appropriation of concomitant funds. The 1975 projected budget submitted by Cincinnati, Ohio of $72,171, from the 1973 level of $1,515, is an example of allocations dependent upon the passage of legislation. This same funding trend is often discernable among States and municipalities with limited programs in 1973 and involved in increasing the scope and orientation of their noise control efforts (Grand Rapids, Michigan; Nassau County, New York).

  Although the budget data gathered for the *Report to the President and Congress on Noise* was extremely limited, a comparison between the 1971 and 1974 surveys substantiates the trend of increased State and municipal noise control funding. The earlier survey indicated that for five municipalities allocating funds specifically for noise, the cost of current programs (1971) varied from approximately 2 cents to 4 cents per resident per year. For the 1974 survey, 17 municipalities projected 1975 budget allocations that were greater than 4 cents per capita.

For example, New York City reported spending approximately 4 cents per resident in 1971; New York City per capita expenditures for 1973 were 12 cents.

The only two States submitting budget data for the 1971 survey were California and Illinois with respective 1971 allocations of 1 cent and 2.5 cents per capita. California reported a 1973 per capita expenditure of 61.89 cents and even a greater projected per capita figure in 1974 – a tremendous upsurge in funding over the 1971 level. Reported Illinois 1973 per capita expenditures and projected 1974 and 1975 allocations were 1.8 cents, 3.02 cents, and 3.67 cents reflecting a steady infusion of funds to operate and refine the established Illinois program.

- *Although many States and municipalities have budgeted funds for noise control activities, reported resources were concentrated among major urban centers.* The distribution of budgeted activities is best shown in Figures 8, 9 and 10. Five of the seven States with the largest 1973 per capita expenditures ranked among the ten most populated States. Three of the four U.S. municipalities with 1970 census populations over two million reported large 1973 noise control expenditures. New York City, Chicago, and Los Angeles spent respectively $950,000, $206,500 and $92,500 for their noise control programs in 1973. (The fourth municipality in this category, Philadelphia, did not respond to the survey). This relationship between population concentration and the amount of funds allocated for noise control is a function of the magnitude and extent of noise problems. A large, industrialized metropolis and transportation center has more serious and pervasive noise problems than does a rural community. For example, eight of the 11 California municipalities that reported 1973 expenditures are located in Southern California in the Los Angeles metropolitan area. The prevalence of budgeted programs in this area is an outgrowth of the concentration of vehicular transportation sources, airports, and industrial construction activity in this region.

- *There is a relation between the stage of program development and the amount of funds budgeted for noise control activities.* Eight of the nine States with per capita 1973 expenditures greater than .4 cent had either established or limited programs. The ninth, South Carolina, was developing a proposed program in 1973. The other seven States that reported 1973 expenditures conducted minimal activities. Accordingly, their per capita expenditures, which ranged from .29 cent to .03 cent in 1973, were significantly less than those of States with more structured programs.

  There was also a large variation in budgeted funds and per capita expenditures among reporting municipalities, reflecting differing stages of program development. Inglewood, California had the highest per capita expenditure for 1973 with 57.1 cents. New York City ranked first in terms of total dollars spent. Both these municipalities had established programs in 1973. At the other end of the spending scale was Charlotte, North Carolina that undertook minimal activities and reported a 1973 per capita figure of .03 cent.

Municipalities with established programs spent an *average of 15 cents per capita* in 1973; those with limited programs averaged 8 cents per capita. The survey results suggest that 15 cents per capita may be a sufficient funding level for implementation of a comprehensive municipal noise control program. However, several municipalities with established programs have allocated substantially less; others considerably more. The amount of funding required must be determined on the basis of local needs and conditions, the severity of noise problems, and the extent of citizen commitment to noise control and abatement.

- *The distribution of reported noise control funding reflects the complex relationship between State noise control efforts and those of municipalities within that State.* Of the 16 States that reported 1973 noise control expenditures, six States did not have any municipalities within their jurisdictions that reported 1973 budgets. Conversely, 12 States that did not provide information on 1973 noise funding had one or more municipalities reporting funded 1973 noise control activities. In several instances, a strong municipal program has apparently acted as a stimulus for State action (Chicago–Illinois). In others, States have required municipalities to initiate noise control efforts. For example, California State planning law requires municipalities to include a noise element in the municipal general plan. Implementation of this requirement is reflected by the fact that 11 California municipalities reported expenditures for noise control in 1973. In contrast, New Jersey did not have any municipalities reporting either 1973 expenditures or 1974 and 1975 projected allocations. This may reflect a tendency by the municipalities to await State guidance. The 1973 emphasis of the New Jersey program was on the development of noise criteria and standards, promulgation of procedural rules and regulations, and planning to integrate municipal actions within the overall State effort.

NOTEWORTHY PROGRAMS

Among the States and municipalities reporting budgetary data, several were particularly significant either with respect to the total amounts of resources allocated for noise control activities or due to large increases in funding levels over the 3-year reporting period.

California ranked first among reporting States both in overall and per capita expenditures. The largest element in the California noise budget for the period July 1, 1973 through June 30, 1974 was an expenditure of $11,942,000 for a school noise attenuation program. Eleven million dollars of this figure represented constructions costs for noise barriers and noise attenuation systems of schools. Conducted by the State Department of Transportation (Highways), this program was estimated to cost approximately $66,000,000 over several years. Noise control expenditures for 1973 were reported by three other California agencies: the Office of Noise Control under the Department of Health spent $26,500 for manpower expenses; the Department of Highway Patrol reported a total 1973 manpower cost of $317,297 for motor vehicle enforcement activities; and, the Division of Aeronautics under the Department of Transportation reported funding of $63,000.

Hawaii ranked second to California in per capita expenditures for noise control with the 1973 per capita figure of 7.34 cents projected to rise to 9.01 cents in 1975. The Hawaii program encompassed implementation of comprehensive enabling legislation, enforcement of vehicular noise regulations, and educational efforts. The reported FY 1973–74 expenditure of $56,491 represents $40,712 in manpower costs, $10,179 for operating expenses, and $5,600 for equipment.

South Carolina reported the largest increase in State per capita expenditures – from .65 cent in 1973 to a projected 4.92 cents in 1975. Although a noise control division was established in August 1973, South Carolina did not at that time have enabling legislation. The budgetary data submitted by South Carolina was a rough estimate of the funding necessary to carry out the minimum requirements of a proposed Noise Control Act.

Among reporting municipalities, New York City and Chicago, with respective 1973 expenditures of $950,000 and $206,500, ranked first and second in total dollars spent. Enforcement related expenditures constituted 68 percent of total Chicago 1973 noise funding and 37 percent of New York City allocations.

Inglewood, California ranked first among reporting municipalities with the largest 1973 per capita expenditure (57.1 cents). Lakewood, Colorado, where a noise control ordinance was enacted in July 1973, projected the highest per capita expenditure (73.9 cents) for 1974 of any reporting State or municipality. The projected 1974 allocation increase to $68,677 over a 1973 level of $31,042 reflects the aggressive nature of the Lakewood program which uses an approach of voluntary compliance through public education.

Downey, California projected the largest increase in municipal per capita expenditures from a 1973 level of 3.7 cents to an estimated 63.0 cents in 1975. The projections are based on funding requirements arising from the anticipated completion of a noise ordinance and a noise element in the Downey general plan which were under development in 1973. Seattle, Washington, with projected noise expenditures for 1975 over two times those of 1973, reported the largest increase in dollar expenditures. Seattle projections were contingent upon the enactment of a comprehensive noise ordinance before the City Council in 1973.

These noteworthy programs demonstrate that many States and municipalities have attached priority to noise control efforts. However, inadequate funds remain a critical and pervasive problem. In responding to the questionnaire, 13 States and 37 municipalities specifically cited insufficient funds as a problem limiting program effectiveness or as an area where EPA could provide assistance. The large number of States and municipalities identifying funding as a need is particularly significant in that the questionnaire referred only to *technical* assistance. EPA's more recent experience in evaluating State and municipal requirements substantiates this survey finding.

Under the Noise Control Act, EPA does not have authority to provide grants to States and municipalities either for the establishment of noise control programs nor for the maintenance and operation of existing programs. However, EPA is continuing to analyze and document the needs of State and municipal governments in this area in order to frame appropriate recommendations for providing additional support.

CHAPTER 7

STATE AND MUNICIPAL NOISE PROGRAM PERSONNEL

Trained personnel, with acoustical expertise and able to devote a substantial portion of time to noise control activities, are essential for the effective administration and enforcement of a noise control program. The increasing number of States and municipalities that have adopted quantitative regulations and initiated comprehensive noise control efforts requires a corresponding increase in the availability of expert manpower. One of the purposes of the 1974 survey and future EPA evaluations is to determine both the number and expertise of personnel associated with State and municipal noise control activities.

States and municipalities were requested to list both existing 1973 and projected (1974 and 1975) personnel affiliated with their noise programs, categorized by job titles and by numbers of individuals within each job category. Specific information on the formal training or acoustical background of personnel was not included. To the extent that this data was available or could be inferred from the general context of the response, it was used to categorize reported personnel based on the following use of job titles.

PROFESSIONAL POSITIONS

Engineer, Environmental Specialist – These two job categories include a variety of professional job titles identified by responding States and municipalities. Among these were mechanical engineer, acoustical engineer, environmental health engineer, and air, noise, and environmental pollution specialist. Engineers and environmental specialists deal with the technical aspects of the noise program (e.g., standards setting, measurement methodologies, noise control engineering). They are presumed to have the greatest degree of expertise in acoustics and environmental noise. However, in many cases, these personnel do not have formal training in acoustics, instead applying their training in related disciplines such as environmental sciences.

Public Health Sanitarian, Industrial Hygienist – In most instances, personnel in these job categories are employed by State and municipal health departments. Although specialized positions, the primary area of expertise is not environmental noise. In several cases, personnel in these categories are also involved in occupational noise exposure.

Planners/Land-Use Analysts, Administrators, Attorneys– These professional personnel are generally involved in specific facets of noise programs related to their area of expertise (planners – noise aspects of zoning, noise responsive land-use planning; administrators – program management, resource allocations; attorneys – legislation development, court actions). Their skills are usually applied to the noise program on an as-needed-basis.

SUPPORT POSITIONS

Environmental Technician/Inspector, Police, Building Inspector – These personnel are primarily engaged in enforcement actions, complaint investigations, and noise monitoring. As a general rule, the environmental technician/inspector is deemed to have greater expertise and training in noise measurement techniques than either of the other positions.

Clerical – (self-explanatory functions). In most instances, these personnel are not applied full-time to noise activities.

Other – This is a miscellaneous category which includes an animal control officer, student interns, and a mechanic.

DATA LIMITATIONS AND ANALYTICAL CONSTRAINTS

In interpreting reported State and municipal personnel figures, the following factors should be considered.

- The tabulated data reflects personnel levels as of 1973. Projected 1974 and 1975 figures are not included as the information provided was often incomplete. Additionally, budget projections were felt to supply a more accurate picture of changes in program status and potential manpower allocations.

- Frequently, a State or municipal agency may have been identified as the responsible organization for noise activities without specific assignments of personnel to fulfill these functions. A greater number of personnel therefore are associated with noise control efforts nationwide than the results indicate.

- In many instances, States and municipalities did not report the percentage of time devoted by identified personnel to noise control. Therefore, both full-time and part-time manpower are included in the tabulated personnel figures.

- The use of job titles differs to a great extent among State and municipal governments. For example, an individual concerned with the environmental impact of land-use planning may be classified by one jurisdiction as a land-use analyst and by another as an environmental specialist. Therefore, while the primary basis for categorizing personnel was the job titles used by States and municipalities, the functions and duties assigned to identified staff as well as program orientation were taken into account.

RESULTS AND DISCUSSION

Nineteen States and 59 municipalities reported 1973 personnel associated with noise control activities. Table 13 lists in rank order by job categories the aggregate number of 1973 personnel reported by responding States. The number of States with personnel in each job category are shown in parentheses as a function of the stage of program development. Table 14 presents reported municipal personnel figures using the same format.

Based on the personnel categorization described earlier, the survey results support the following observations:

- *A significant number of States and municipalities have personnel affiliated with noise control activities.* In 1973, 41 percent of the States and 32 percent of the municipalities responding to the survey had at least one, full or part-time, noise personnel position. The remaining respondents either did not have noise personnel or in a few cases did not provide this information as personnel from other areas were applied to noise activities on a limited basis.

- *There has been a marked increase in both the number of State and municipal noise control personnel and the relative level of expertise since 1971.* One of the major findings of the earlier survey was that, with few exceptions, State and municipal programs were staffed by on demand, part-time personnel, often having no acoustical background and drawn from various agencies. In 1973, a total of 105 State personnel and 260 municipal personnel were involved in noise control efforts. Further, the professional categories of engineer and environmental specialist together with the supporting positions of environmental technician/inspector accounted for 65 percent and 53 percent of the respective State and municipal personnel totals. These three job categories include reported manpower with training and expertise in noise measurement and control techniques.

- *Reported State and municipal staff size and expertise varied with the stage of program development.* This result reflects the fact that noise control efforts directed to the development and initiation of a program have differing personnel requirements than those where primary involvement is on standards development to implement enabling legislation or those of established programs where emphasis is on compliance monitoring, enforcement, and public education.

TABLE 13
1973 STATE PERSONNEL AFFILIATED WITH NOISE CONTROL EFFORTS

Job categories by rank order	Number of 1973 State personnel[a]			
	Stage of program development			Total
	Established program	Limited program	Minimal activities	
1) Environmental Technician/ Inspector	30 (1)[b]	2 (2)	3 (2)	35 (5)
2) Engineer	9 (2)	6 (3)	3 (1)	18 (6)
3) Police	13 (1)[b]	–	3 (1)	16 (2)
4) Environmental Specialist	8 (4)	4 (3)	3 (3)	15 (10)
5) Clerical	4 (3)	4 (4)	3 (3)	11 (10)
6) Industrial Hygienist	–	–	5 (2)	5 (2)
7) Public Health Sanitarian	–	–	2 (2)	2 (2)
8) Planners/Land-Use Analysts	–	–	1 (1)	11 (1)
9) Other[c]	–	–	2 (2)	2 (2)
Total	64	16	25	105
Number of States reporting 1973 personnel	3	5	11	19
Number in development category	3	9	20	32
Percent reporting personnel	100%	56%	55%	59%

[a] Numbers in parentheses represent number of States reporting personnel in each category.

[b] Personnel reported by California.

[c] Includes administrative personnel.

TABLE 14
1973 MUNICIPAL PERSONNEL AFFILIATED WITH NOISE CONTROL EFFORTS

Job categories by rank order	Number of 1973 municipal personnel[a]				
	Stage of program development				Total
	Established program	Limited program	Minimal activities	No program effort	
1) Environmental Technician/ Inspector	39 (7)	3 (2)	32 (8)	–	74 (17)
2) Engineer	27 (6)	5 (4)	3 (3)	–	35 (13)
3) Environmental Specialist	17 (8)	7 (6)	5 (4)	–	29 (18)
4) Public Health Sanitarian	–	6 (4)	14 (9)	–	20 (13)
5) Clerical	11 (8)	5 (5)	4 (3)	–	20 (16)
6) Police	1 (1)	1 (1)	16 (5)	–	18 (7)
7) Planners/Land Use Analysts	1 (1)	11 (9)	2 (2)	2 (2)	16 (14)
8) Industrial Hygienist	9 (1)	6 (2)	–	–	15 (3)
9) Building Inspector	2 (1)	9 (4)	4 (4)	–	15 (9)
10) Administrators	2 (2)	1 (1)	4 (4)	–	7 (7)
11) Other[b]	3 (2)	–	3 (2)	–	6 (4)
12) Attorney	2 (2)	–	3 (2)	–	5 (4)
Total	114	54	90	2	260
Number of municipalities reporting 1973 personnel	11	20	26	2	59
Number in development category	11	25	92	55	183
Percent reporting personnel	100%	80%	28%	4%	32%

[a] Numbers in parentheses represent number of municipalities reporting personnel in each category.

[b] Miscellaneous category which includes an animal control officer, student interns, and a mechanic.

All of the States and municipalities with established programs reported 1973 personnel. Sixty-one percent of the State personnel and 44 percent of the municipal personnel were affiliated with established programs. Further, over two-thirds of the staffs of those States and municipalities with established programs were either engineers, environmental specialists, or environmental technicians/inspectors. The distribution of job categories among established programs appears designed to match specific program elements with associated personnel expertise. For example, the substantial enforcement activities undertaken in the Chicago program are reflected in a professional and support staff composition of two engineers and nine environmental technicians. The multifaceted nature of the Los Angeles program is complemented by staff members including one engineer, three environmental specialists, one police officer, two building inspectors, and one planner/land-use analyst.

The more expert job categories also accounted for a significant number of the personnel reported by States and municipalities with limited programs. However, the average staff size of these efforts was significantly less than that of States and municipalities with established programs.

Approximately 30 percent of both States and municipalities had only one, full or part-time, personnel position affiliated with noise control. The majority of States and municipalities that reported the involvement of only one individual carried out minimal activities. Very often, where only one staff member had been assigned noise related responsibilities, the primary program orientation involved responding to complaints and requests for information. In other cases, the individual was charged with initial planning leading to the development of legislation and a comprehensive noise control program. The types of personnel reported by respondents conducting minimal activities were far more varied than those of either established or limited programs. The job category cited most frequently by municipalities in this stage of program development was public health sanitarian, reflecting the designation of the health department as the responsible agency for noise control.

- *There is a relationship between the types of job categories reported and the legislative orientation of noise control efforts.* A nuisance oriented program has differing personnel needs than a program based on comprehensive legislation incorporating acoustical criteria. This relationship is exemplified by the fact that 50 percent of the municipal personnel in the planner/land-use analyst job category were from California where State law requires the inclusion of a noise element in the municipal general plan.

- *The allocation of job categories differs between States and municipalities.* As indicated in Table 13, when the 30 environmental technician/inspector positions reported by California are not included, the specialized professional categories of engineer and environmental specialist account for the highest percentage of State noise program personnel. The prevalency of these two categories within many State programs may be attributable to the application of manpower from other environmental areas (e.g., air and water pollution programs) to noise control efforts. Secondly, it appears to reflect the State emphasis on development of regulations to implement enabling legislation as well as on the provisions of expert guidance to municipalities.

The types of personnel involved in municipal noise control activities were more varied. This finding may result from (1) the part-time use of personnel from a number of municipal offices, (2) differing noise control approaches (e.g., zoning), and (3) the greater variation among municipalities in the types of responsible agencies.

- *The largest number of reported personnel were environmental technicians/ inspectors.* Thirty-three percent of reported State positions and 28 percent of reported municipal positions fall into this category. In established programs, these personnel are primarily involved in compliance monitoring and enforcement actions. In less developed programs their responsibilities are directed to complaint investigation and source or ambient monitoring in support of program development. These personnel are frequently involved in monitoring other environmental pollutants (e.g., water samples) and complaint response deriving from various areas of environmental concern.

- *The job category cited by the greatest number of States and municipalities was that of environmental specialist.* Ten States and 18 municipalities reported personnel in this category. This demonstrates the increasing expertise and environmental orientation which characterize many State and municipal noise control efforts.

NOTEWORTHY PROGRAMS

Among the States, California reported the largest number of personnel involved in noise control – 50 staff members representing 48 percent of the total number of reported State personnel. The majority of California noise personnel were associated with vehicular noise control.

Illinois, with 10 noise program staff members, had the second largest number of personnel affiliated with noise control efforts. Reflecting the 1973 emphasis of the Illinois program on the development of regulations to implement enabling legislation, eight of the reported 10 personnel were in the expert professional categories of engineer and environmental specialist.

New York City with a total of 45 noise personnel ranked first among the municipalities. This total includes 18 engineers and physicists responsible for the administrative and technical aspects of the program and 23 environmental inspectors involved in the enforcement of the New York City noise code.

EPA'S ROLE

Although there appears to have been significant increases in both the number and expertise of personnel associated with State and municipal noise control activities since the 1971 survey, lack of trained manpower continues to limit State and municipal efforts. A large number of State and municipal survey respondents cited the need for additional trained manpower (either by hiring new personnel or through upgrade training of existing staff) as one of the problems limiting their program and/or as an area where EPA could provide technical assistance.

In response to this requirement, EPA, both at the headquarters and regional levels, provides guidance on the selection and training of personnel to various State and municipal governments. EPA also sponsors regional noise workshops and seminars for State and municipal officials. EPA has recently published a report entitled *Guidelines for Developing a Training Program in Noise Survey Techniques.*[1] It provides recommendations on the content, format, organization, and administration of a training program for noise survey technicians. The report outlines material for a 4½ day training course. As the EPA noise program expands, emphasis will be placed on assisting States and municipalities with their varying manpower needs.

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[1] *Guidelines for Developing a Training Program in Noise Survey Techniques*, EPA Document 550/9-75-021 (July 1975).

CHAPTER 8

INSTRUMENTATION

Adequate sound measurement and analysis instrumentation is necessary both for noise monitoring and for the effective enforcement of noise control ordinances and regulations which incorporate acoustical criteria. These criteria appear most often in the form of numerical sound levels measured in accordance with a specified methodology.

One of the purposes of the survey was to identify the number and types of instrumentation in use in State and municipal environmental noise control efforts. Each questionnaire recipient was asked to list by manufacturer name and model number the sound measurement and analysis instruments on hand. States and municipalities were further requested to project instrument purchases for 1974 and 1975. However, these projections have not been included in the results as so few survey respondents provided this information.

State and municipal noise analysis instruments have been classified into nine distinct categories. These categories are defined below.

1. *Sound Level Meter* – An instrument consisting of a microphone, an amplifier, an attenuator, a frequency weighting network, and a display used to measure sound levels in decibels. The frequency weighting network is employed to measure A, B, or C-weighted sound levels.

2. *Microphone Calibrator* – An instrument capable of emitting one or more precise tones that is used to calibrate instrument systems employing microphones (e.g., sound level meters). When in calibration, a sound measuring instrument will yield the sound levels stated on the instrument. If out of calibration, the measurements are inaccurate to the degree the sound measurement instrument is out of calibration.

3. *Sound Spectrum Analyzer* – An instrument that is used to determine the frequency characteristics of a sound. With this instrument, an operator can measure the sound pressure level in any of a series of specified frequency bands covering the range of the sound spectrum. Octave band, 1/3 octave band, and narrow band analyzers are examples of this type of instrument.

   For the purposes of this report, octave band and 1/3 octave band filter sets which are designed to be used in conjunction with sound level meters are accounted for as sound spectrum analyzers.

4. *Graphic Level Recorder* – An instrument which creates a permanent, reproducible record of the results of a measurement by means of scribing a line on a moving paper tape. As an accessory to sound and vibration instruments, it can be used to record sound or vibration levels over periods of time. In conjunction with sound spectrum analysis instruments, some graphic level recorders may be used to plot the frequency spectrum of a noise or a vibrating object.

5. *Magnetic Tape Recorder* – An instrument which can be used to create a permanent reproducible record of a measurement by means of recording an electrical signal on a moving magnetic tape. As an accessory to sound and vibration instruments. it can be used to record sound or vibration phenomena over periods of time.

   For purposes of this report, only highly accurate, precision magnetic tape recorders have been accounted for under the heading *Magnetic Tape Recorders*. General purpose magnetic tape recorders (such as inexpensive cassette recorders) have been excluded from this category because of their limited capability for application in the accurate measurement and analysis of sound.

6. *Sound Level Amplitude Analyzer* – An instrument which measures, for a group of specified sound level amplitude ranges, that portion of the total measurement time during which the level of a sound dwells within each range. The resultant time-in-level data can be used to create a histogram of the amplitude distribution of the sound. Sound level amplitude analyzers are often used to assess noise exposure.

7. *Vibration Meter* – An instrument which is capable of measuring one or more of the following three parameters of a vibrating body: its acceleration, velocity, or displacement. Some sound level meters are capable of measuring vibration when the microphone is replaced by an accelerometer.

   For the purposes of this report, accelerometers which are designed to be used in conjunction with sound level meters are accounted for as vibration meters.

8. *Real-Time Analyzer* – An instrument which is capable of analyzing sound, vibration, or other phenomena in real-time (i.e., as it occurs). Real-time analyzers earned their name for their speed of operation. Complete octave, 1/3 octave, or narrow band frequency analyses may be performed by a real-time analyzer on a continuous basis.

9. *Computer/Programmable Calculator* – Used in the statistical analysis of noise levels.

RESULTS AND DISCUSSION

Table 15 identifies the types and quantities of instrumentation reported by States and municipalities. Instrumentation on hand is shown as a function of the stage of program development. The survey results support the following observations:

- *The sound level meter was the most frequently cited piece of instrumentation.* Each State and municipality reporting noise program instruments had at least one sound level meter. In total, 288 sound level meters were listed by the respondents. Thus in 1973, 32 States and 52 municipalities were able to objectively quantify the overall noise levels in their environment, provided personnel were available and trained for this purpose. Measurements obtained were used for such purposes as monitoring environmental levels, enforcement, and land use planning.

  It is interesting to note that less than one-half of the respondents with sound level meters reported microphone calibrators. Forty-three respondents listing one or more sound level meters did not identify microphone calibrators. It is possible that there are sound level meters being used in noise control activities that are out of calibration because of the unavailability of microphone calibrators. This would have a serious effect on the validity of ensuing measurements. However, calibrators may have been overlooked by the respondents or implied when sound level meters were listed.

- *There is a strong relationship between the stage of noise program development and the types and number of noise analysis instrumentation utilized.* The three States with established programs accounted for 52 percent of the reported State instruments. Similarly, the 10 established municipal programs for which instruments were specified represented 49 percent of the total number of reported municipal noise analysis instruments. As indicated in Table 15, where in general instruments are listed in increasing order of technical sophistication, States with established or limited programs such as California, Hawaii, Florida, Illinois, and New York have sophisticated equipment including graphic level recorders, octave band filters, amplitude distribution analyzers and real time analyzers. These instruments enable noise sources to be statistically analyzed in terms of frequency components and time varying levels. Detailed analysis is necessary where noise regulations specify statistical breakdown of levels such as L_{10}, L_{50}, L_{eq}, or octave band level limits. A parallel may be drawn with strong municipal noise programs such as Inglewood, Chicago, New York City, St. Petersburg, and Los Angeles.

- *None of the respondents listed any of the new digital noise monitoring systems in their instrument inventories.* One explanation for this might be that few, if any, of these systems were commercially available in 1973. Such systems are extremely useful for monitoring over an extended period of time (24 hours) without attendant

TABLE 15
STATE AND MUNICIPAL SOUND MEASUREMENT AND ANALYSIS INSTRUMENTATION AS A FUNCTION OF THE STAGE OF DEVELOPMENT

Type of instrument	Stage of development								Total number of instruments
	Established		Limited[a]		Minimal		No program		
	Number	Equipment	Number	Equipment	Number	Equipment	Number	Equipment	
STATE RESPONDENTS									
Sound level meters	3	86	7	34	15	49	6	11	180
Microphone calibrators	2	37	4	11	8	15	3	7	70
Sound spectrum analyzers	3	10	6	12	6	10	1	1	33
Graphic level recorders	2	19	3	4	1	2			25
Magnetic tape recorders	3	14	3	5					19
Amplitude distribution analyzers	2	14	3	4	2	2			20
Vibration meters	1	1	2	2	1	1			4
Real-time analyzers	1	1	1	1					2
Computers/programmable calculators	1	1	1	1					2
Total		183		74		79		19	355
MUNICIPAL RESPONDENTS									
Sound level meters	10	49	16	24	22	32	3	3	108
Microphone calibrators	7	23	8	10	6	8	1	1	42
Sound spectrum analyzers	5	8	6	9	5	6			23
Graphic level recorders	5	6	3	3	3	3			12
Magnetic tape recorders	4	11	3	4	2	2			17
Amplitude distribution analyzers	4	4	1	1	3	3			8
Vibration meters	2	3	1	1	1	1			5
Real-time analyzers	2	2							2
Computers/programmable calculators	2	2							2
Total		108		52		55		4	219

[a] The State of Michigan which is categorized as a limited program reported instrumentation but did not specify the quantities and is therefore not included in the above figures.

[b] Lakewood, Colorado with an established program reported $4,100 of unspecified monitoring equipment in addition to a van which are not included in the above figures.

personnel since they can accumulate and analyze large quantities of data. It is expected that digital systems will be incorporated into comprehensive programs undertaking monitoring in the future.

- *In several instances, States and municipalities did not fully utilize their instrumentation capabilities.* Four respondents reported sizable inventories of noise analysis and monitoring instruments which seemed to be incompatible with program orientation and level of activity. There was limited use of the instruments either due a lack of quantitative standards, manpower or acoustical expertise. Therefore, the amount of equipment available is not always an accurate indicator of program comprehensiveness, since a simple Type II sound level meter is all the analysis instrumentation needed for some noise control activities. The nucleus and objectives of a noise control program should be firmly established before equipment is purchased. Six States and three municipalities that had at least one sound level meter had not instituted any noise control efforts in 1973 due to a lack of manpower.

- *A significant number of States and municipalities that instituted enforcement actions in 1973 did not have sound measurement and analysis instrumentation.* Even though many respondents used instrumentation as an integral part of their noise control efforts, 32 municipalities enforcing noise regulations did not report noise measuring and analysis capabilities. This is discouraging since enforcement actions in these cases must depend on subjective interpretation by the enforcer (i.e., police, inspector) as to what constitutes a nuisance or ordinance violation. For instance, 18 of the 25 municipalities that reported the police department as the primary responsible agency for noise control, did not have noise measurement capabilities. This places the burden on police officers to assess noise as a nuisance. Many respondents addressed this shortcoming, stating that noise control efforts without specified acoustical criteria and noise measuring instruments had particular difficulty instituting and upholding enforcement actions in court.

- *Few States and municipalities indicated that measurement methodologies had been specified for noise monitoring.* Their absence may result in a lack of precision and repeatability in the measurement of specific noise sources. This question will be directly addressed in future EPA surveys.

ROLE OF EPA

The Noise Control Act authorizes EPA to provide technical assistance to States and municipalities on the selection and operation of noise instrumentation. Additionally, EPA is authorized to conduct and finance research to develop improved methods and standards for the measurement and monitoring of noise, in cooperation with the National Bureau of Standards, Department of Commerce.

Responses to the technical assistance area of the questionnaire substantiated and confirmed the need for continued EPA efforts in noise measurement assistance. The third and fourth most frequently cited areas where technical assistance as required by States and municipalities were development of measurement methodologies and instrumentation needs.

EPA technical assistance projects in these areas include:

- Development of an enforcement workbook containing measurement methodologies for community noise sources.
- The National Bureau of Standards is conducting a study under an Interagency Agreement with EPA on the performance of various microphone types as a function of temperature and relative humidity. This study is valuable in that the one element in a noise monitoring system which must be exposed to the outdoor environment is the microphone.
- Although EPA is not authorized to provide funding or grants for State and municipal governments to purchase needed instruments, through the 10 EPA regional offices, analysis instruments are loaned on a limited basis in support of many State and municipal noise monitoring efforts.
- Workshops are provided by EPA regional noise representatives to familiarize State and municipal officials with the noise analysis instruments presently available and their correct implementation in noise surveys and enforcement activities.
- As additional types of sound measurement and monitoring equipment are becoming commercially available, EPA continues to evaluate the reliability and applications of such instrumentation to meet State and municipal program requirements.

CHAPTER 9

ENFORCEMENT

An active enforcement program is the most direct and effective means to achieve compliance with noise control regulations and procedural requirements. The degree to which legislation is enforced and the amount of resources allocated for enforcement often determine the success or failure of noise control efforts. The types of enforcement actions instituted are dependent upon program orientation and the authority conferred by statute. Frequently, if enforcement actions are to be upheld in court, they must be supported by demonstrated proof of violation of quantitative noise regulations. Such proof is based on measurements of noise emissions taken by trained personnel using appropriate sound measurement and analysis instrumentation.

States and municipalities were requested to provide information on (1) the agency responsible for enforcement activities, (2) the types and number of enforcement actions instituted in 1973, and (3) enforcement problem areas. Responses to the first two questions in this survey area provided data on the number of States and municipalities involved in enforcement, the organization and coordination of enforcement efforts with other program elements, and the level of enforcement activity. These results are discussed in the first section of this chapter. State and municipal response identifying the most significant enforcement problem areas not only indicate the classes of noise sources most frequently in violation of noise regulations but also provide data for use in establishing Federal regulatory priorities. This information is presented in the second section–Enforcement Problem Areas.

ENFORCEMENT ACTIVITIES

State and municipal enforcement efforts fall into two major categories: (1) complaint activities and investigations, and (2) enforcement actions. Complaints aid in the initial identification of problem noise sources or areas. Complaint response and associated investigations not only increase public awareness and interest in noise control but are often the first step towards instituting enforcement actions. Therefore, States and municipalities that have instituted some type of enforcement proceedings against violators of statutory provisions are necessarily involved in complaint activities.

The second category (enforcement actions) encompasses a variety of specific actions used to insure compliance with noise control requirements. These include: arrests, cease and desist orders, citations, court proceedings and actions, inspections, notices, summonses, tickets, verbal and written requests, violations and warning letters.

DATA LIMITATIONS AND ANALYTICAL CONSTRAINTS

Frequently, responding States and municipalities did not provide specific data in this survey area. This may be attributable to (1) the generality of the question or (2) the fact that precise records of noise enforcement activities were not maintained or separable from other actions. Therefore, a large degree of interpretation and inference was used in analyzing reported State and municipal enforcement activity. The following data limitations should be recognized in considering the survey results.

- In analyzing the responses, it was not always possible to differentiate between complaint activities and enforcement actions. Further, the overall level of complaint activity reported was extremely low especially as this facet of enforcement probably involves a greater number of States and municipalities than any other. This lack of data may be due to unavailability of statistics on complaints and investigations. The importance of such activities in enforcement also may not have been taken into account by many respondents and so mention omitted in the reply. Therefore, the results presented deal only with enforcement actions.

- In some cases, the number of enforcement actions were not reported. States and municipalities that did not provide this information have been included in the tables as enforcers, although they made no contribution to the total number of actions cited.

- No meaningful breakdown of the types of enforcement actions (e.g., arrests, warning letters) instituted could be made due to the non-specific nature of the responses.

- A significant number of the States and municipalities that reported 1973 enforcement actions did not specify the noise sources instigating these actions. These data appear in the tables in the category "Unspecified Noise Areas." Therefore, the number of actions shown in specific enforcement areas may significantly under-represent the actual level of activity.

- The outcome of those enforcement activities that were instituted could not be determined from the questionnaire responses. Information on the number of actions resolved by voluntary compliance as opposed to those requiring legal proceedings and the results of legal actions would have been valuable in assessing the effectiveness of enforcement efforts.

RESULTS AND DISCUSSION

Table 16 provides a breakdown of the areas of enforcement activity and number of actions instituted (where data is available) for those nine States reporting 1973 enforcement actions. The stage of development, type of legislative provisions, and availability of instrumentation are also identified as these three factors have implications for the effectiveness of enforcement efforts. Table 17 presents similar information for the six municipalities reporting the largest number of 1973 enforcement actions. A summary of reported 1973 municipal enforcement actions is shown in Table 18.

Despite the data limitations mentioned earlier, the survey results substantiate the following general observations:

- *There has been a significant increase in the level of State and municipal enforcement activity since 1971.* Only three of the 41 States and 11 of the 114 municipalities responding to the 1971 survey had instituted enforcement actions. In contrast, nine States and 81 municipalities reported enforcement actions in 1973. In some instances, this reflects the adoption of quantitative noise regulations providing a definitive and consistent basis for enforcement activities.

- *Municipal enforcement activity was appreciably greater than the State level.* Forty-four percent of the responding municipalities had instituted enforcement actions in 1973. All of the municipalities with established programs and over one-half of those with limited programs or those conducting minimal activities reported enforcement efforts. The greater degree of municipal involvement in enforcement reflects the local nature of many noise problems (e.g. construction sites, paging systems, air conditioners. domestic animals), as well as the greater accessibility of municipal officials to deal with these problems. Both the types of noise sources regulated and the noise control approches (zoning, restrictions on hours of operation) adopted by municipalities are often more directly applicable to enforcement actions than are State efforts. State surface transportation regulations are important exceptions to this observation. However, municipal actions in this area are also widespread. Additionally, several States apparently have directed their noise control efforts toward development of regulations, research, and provision of assistance to municipalities while encouraging their political subdivisions to undertake enforcement activities.

TABLE 16
INSTITUTION OF ENFORCEMENT ACTIONS BY STATES IN 1973

State	Stage of development	Types of legislative provisions	Enforcement area	Number of actions	Instrumentation
California	Established program	Motor vehicle (A)[a] Land use (A) Recreational vehicles (A) Aircraft (A)	Surface transportation systems	10,385	Yes
Puerto Rico	Minimal activities	Not reported	Unspecified	6,154	Yes
Hawaii	Established program	Vehicular (A)	Surface transportation systems	1,410	Yes
Pennsylvania	Limited program	Motor vehicle (A)	Unspecified	48	Yes
Illinois	Established program	Land use (A)	Unspecified	20	Yes
Massachusetts	Limited program	Snowmobile (A)	Unspecified	20	Yes
Nevada	Minimal activities	Motor vehicle (A) (proposed)	Surface transportation systems	2	Yes
Connecticut	Limited program	Motor vehicle (A) Snowmobile (A)	Surface transportation systems	Unspecified	Not reported
Washington, D.C.	Minimal activities	Not reported	Unspecified	Unspecified	Yes

[a] (A) denotes inclusion of acoustical criteria in legislation.

TABLE 17
MUNICIPALITIES REPORTING LARGEST NUMBER OF 1973 ENFORCEMENT ACTIONS

Municipality	Stage of development	Legislative provisions	Enforcement areas	Number of actions	Instrumentation
New York City	Established program	Nuisance; (A)[a] motor vehicle, construction equipment, other	Unspecified	5,700	Yes
			Machinery and equipment	3,600	
				9,300	
Oklahoma City	Limited program	Nuisance	Unspecified	100	Yes
			Surface transportation systems	3,000	
				3,100	
Corpus Christi	Minimal activities	Nuisance	Unspecified	862	Not reported
			Surface transportation systems	1,142	
				2,004	
Phoenix	Minimal activities	Nuisance; other (A)	Surface transportation systems	1,905	Not reported
Columbus, Ga.	Minimal activities	Nuisance	Surface transportation systems	989	Not reported
Chicago	Established program	(A) Land use, motor vehicle, construction, industrial, other	Unspecified	944	Yes

[a] (A) denotes inclusion of acoustical criteria in legislation.

TABLE 18
1973 MUNICIPAL AREAS OF ENFORCEMENT ACTION

Areas of enforcement action	Number of enforcers	Municipalities specifying number of actions	Number of actions	Number of actions by 5 most active municipalities	Number of enforcers with acoustical legislation	Number of enforcers with instrumentation
Enforcement actions instituted	81	50	22,057	19,444	29[a]	32
Unspecified noise areas	61	34	8,772	8,011		
Surface transportation systems	26	17	9,400	7,833		
Machinery/equipment	6	4	3,877	(3,600)[b]		
Air conditioners	1	1	8	–		

[a] This may slightly underrepresent the number of municipal enforcers with acoustical legislation as copies of ordinances were not always available.

[b] Represents enforcement actions by New York City only.

- *Of those States and municipalities involved in enforcement activities, a small per centage account for the overwhelming majority of activities report.* Seven States specified the number of enforcement actions instituted in 1973. Three of these States accounted for 99.5 percent of the total number of State actions reported. Eighty-three percent of the total number of enforcement actions specified by 50 municipalities were instituted by the six municipalities listed in Table 17. Forty-two percent were reported by New York City alone. The majority of reported enforcement actions were carried out by States and municipalities with established programs. The skewed distribution of activity among enforcers indicates that some programs are strongly oriented towards enforcement as an effective means to attain desired noise levels, while the emphasis of others is on such elements as public education or research.

- *The effectiveness of many municipal enforcement efforts appeared to be limited by the absence of acoustical criteria and instrumentation capabilities.* Only 36 percent of those municipalities reporting enforcement actions were known to have quantitative noise regulations in 1973. Forty percent of the 81 municipal enforcers had instrumentation. However, when measured by the number of actions instituted, some municipalities had established workable enforcement programs based on nuisance provisions.

- *The greatest number of enforcement actions were carried out in the area of surface transportation systems.* Noise sources in this category include trucks, motorcycles, automobiles, railroads, and buses. This was the only enforcement area specified by responding States. Sixty-five percent of all State enforcement actions involved surface transportation systems. California and Hawaii directed all enforcement efforts against such noise sources.

  Thirty-four percent of the municipalities instituting actions did so in the area of surface transportation noise, and 43 percent of the total number of actions carried out were in this area. Oklahoma City, Phoenix, and Corpus Christi, were the leaders in actions taken against surface transportation systems.

The large number of enforcement actions instituted against surface transportation systems may reflect (1) the extent of the population exposed to these sources, (2) the fact that performance standards for vehicular noise sources were one of the most prevalent types of acoustical legislation in effect in 1973, and (3) efforts to control motor vehicle exhaust systems. Surface transportation was also the class of noise sources most frequently cited as an enforcement problem area by the questionnaire respondents, indicating its prominent position as a target for control and regulation at all levels of government.

- *The only other specific enforcement areas identified by municipal respondents were machinery/equipment and air conditioners.* However, enforcement actions in these areas were extremely limited. Six municipalities instituted actions against machinery and equipment. Ninety-three percent of these actions were reported by New York City – the majority of which dealt with sound reproduction devices and construction equipment. Only one municipality reported enforcement actions against air conditioners.

ENFORCEMENT PROGRAM AREAS

Survey respondents were also requested to identify the classes of noise sources accounting for the majority of enforcement actions. State and municipal recognition of enforcement problem areas is essential for ordinance revision and expansion, development of enforcement measurement methodologies and procedures, and determination of enforcement resource allocations. At the Federal level, knowledge of the difficulties encountered by States and municipalities in instituting enforcement actions assists in (1) identifying major noise sources for EPA regulatory consideration, and (2) defining the types of EPA guidance necessary to foster complementary State and local in-use regulatory and enforcement actions.

DATA LIMITATIONS AND ANALYTICAL CONSTRAINTS

A wide variety of problem noise sources were cited by the survey respondents ranging from aircraft to domestic animals. In interpreting which sources constitute the most serious State and municipal enforcement problems, the following factors should be taken into account:

- The respondents' interpretation of what data was being requested varied. In many cases, problems identified referred only to those areas in which enforcement actions had been instituted or where specific enforcement capabilities existed. In other instances, responses were broader in scope, including all problem noise sources even though no control or enforcement measures had been initiated.

- States and municipalities did not rank problem noise sources in their order of importance. Therefore, the number of respondents citing each area is the basis for identifying the most significant problems.

- The data often did not indicate why specific noise sources were considered enforcement problems.

RESULTS AND DISCUSSION

Sixteen States and 102 municipalities specified one or more enforcement problem areas. This constitutes, respectively, 35 percent and 56 percent of the States and municipalities responding to the survey. Table 19 lists the number of respondents identifying the five most often cited classes of noise sources and indicates the percentage these represent of the States and municipalities that addressed the question. Other identified noise sources are specified in a footnote to the table. Figure 11 depicts the frequency with which the five major classes of noise sources were identified. A breakdown of the specific sources included in the surface transportation category is shown in Figure 12.

The data presented in these Figures and Table 19 provide the basis for the following observations.

- *The enforcement problem area identified by the greatest number of States and municipalities was the category of surface transportation systems.* Fourteen States and 75 municipalities specified one or more types of surface transportation as enforcement problems. Seventy-five percent of the States and 58 percent of the municipalities which responded to this survey question identified motor vehicles in general as a major problem. When the type of vehicle was cited, trucks, motorcycles, autos, trains, and buses, in that order, were the surface transportation noise sources most frequently reported as enforcement problems.

  States and municipalities in all stages of noise program development identified surface transportation systems as a significant problem area due to a number of reasons. For example, the California Highway Patrol reported that modified exhaust systems presented a problem for vehicular enforcement activities. Those States and municipalities where enforcement was based on subjective interpretation of nuisance provisions had difficulty in upholding citations against motor vehicles in court. Those States and municipalities which had not

TABLE 19
STATE AND MUNICIPAL ENFORCEMENT PROBLEM AREAS

Problem areas	States		Municipalities	
	Number citing problem	Percent[a] of States citing problem	Number citing problem	Percent of[a] municipalities citing problem
Surface transportation systems	14	88	75	74
Industrial	9	56	30	29
Construction	8	50	29	28
Airports	7	44	33	32
Air conditioners	3	19	28	27
Other[b]	8	50	44	43

[a] Percentages shown are based on the number of States and municipalities which specified one or more enforcement problem areas.

[b] This category includes six problem areas identified by both States and municipalities. These areas and the total number of States and municipalities citing each are: residential noise sources (12), commercial noise sources (10), freeways (9), motorcycle racetracks (3), emergency vehicles (3), and public entertainment places (3). One State listed recreational vehicles as an enforcement problem. Also included are five noise sources mentioned only by municipalities: domestic animals (13), paging systems (9), generators (4), carwashes (3), and swimming pool equipment (3).

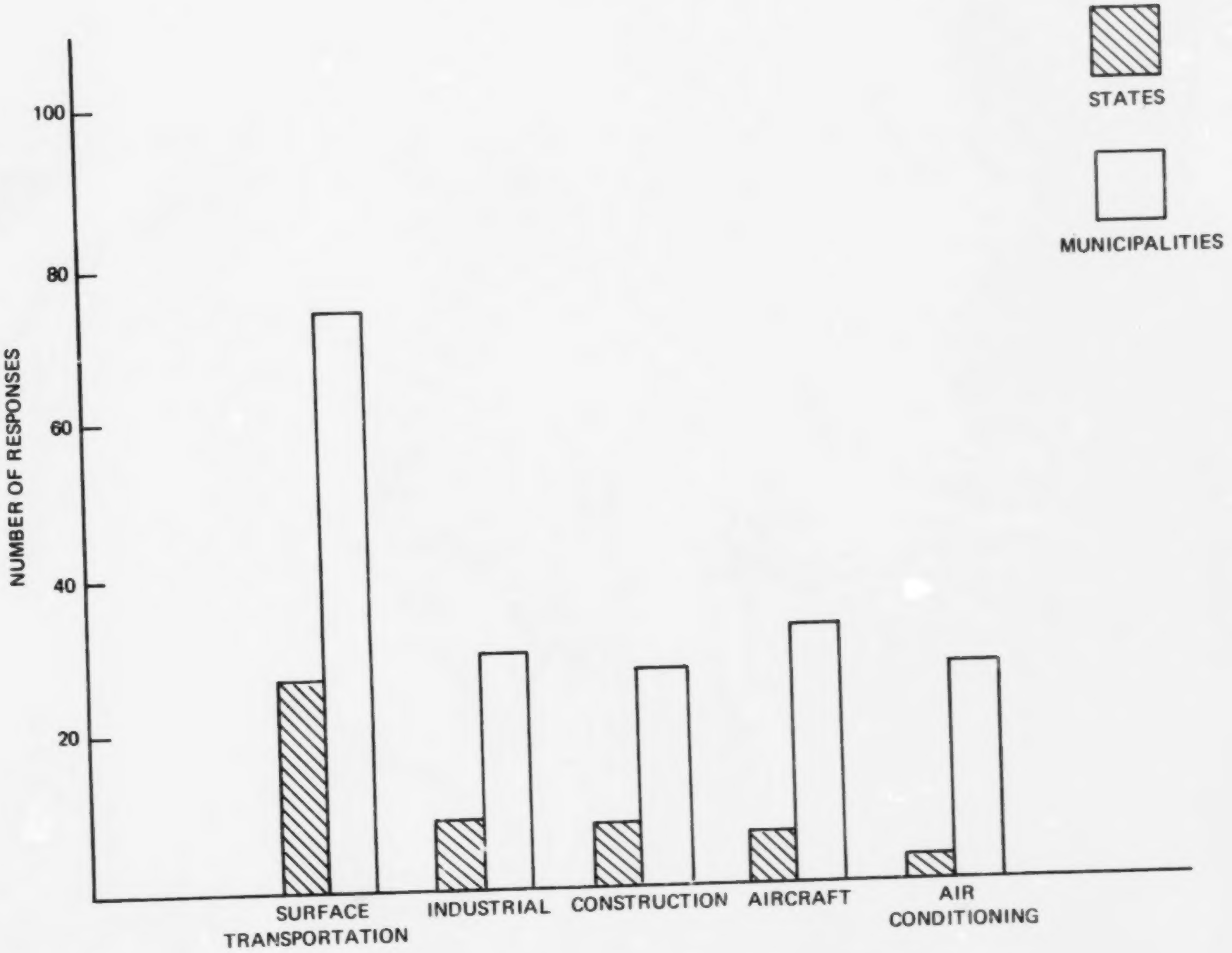

Figure 11. Major problem noise sources of States and municipalities

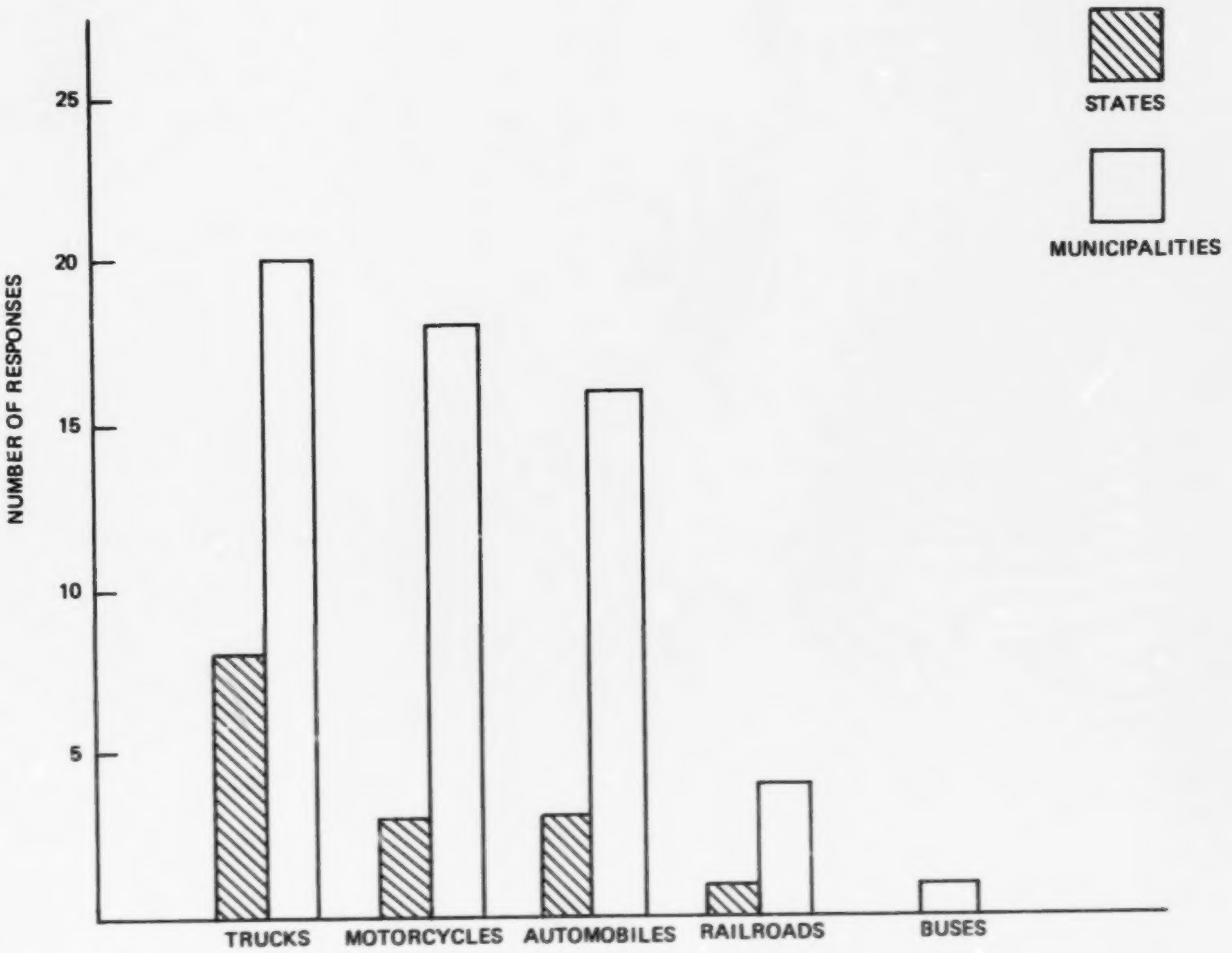

Figure 12. Surface transportation system problem noise sources

initiated any vehicular enforcement activities identified surface transportation systems as a problem due to the large number of (1) vehicles in use, (2) people impacted, and (3) complaints received.

- *Noise generated by industrial and construction activities is a major problem.* Over 50 percent of the States and almost 30 percent of the municipalities which specified one or more areas identified industrial and construction noise as enforcement problems. Despite this, only six municipalities reported instituting enforcement actions against such sources in 1973. Lack of enforcement effort therefore does not seem to be a result of lack of awareness of the problem. A primary deterrant to enforcement action in this area may be inadequate legislative support. Nuisance ordinances often do not provide the specific criteria necessary for effective control. Of the 91 municipalities that submitted copies of their noise legislation, six had performance standards for construction equipment and six had performance standards covering industrial equipment. New York City, instituting the largest reported number of enforcement actions against construction equipment, had enacted performance standards for both the operation and sale of air compressors and paving breakers as well as provisions regulating the hours of operation of construction activities. Performance standards specifying permissable sound levels at the property line from construction activities can offer an effective means to control these sources.

- *Airports and aircraft operations were frequently identified as problem noise sources.* Seven States and 33 municipalities cited aircraft operations as a problem area. However, preemption places responsibility for regulating noise emissions from aircraft at the Federal level. If States and municipal governments are airport proprietors, they may make changes in airport operations to minimize noise on the basis of their right as property owners to defend themselves from liability and to keep their air terminal systems viable States and municipalities also have the power to control exposure to aircraft through land use control and building design.

  The problem of aircraft noise is greatest in those areas immediately surrounding airports, causing interference with conversation, disruption of sleep, and annoyance. These factors have contributed to the identification of aircraft as a major problem noise source.

- *Air conditioners, both commercial and residential, have become a major problem noise source.* Three States and 28 municipalities identified noise generated by air conditioning units as an enforcement problem area. Dependency on nuisance provisions probably contributes to this finding. Several municipalities have regulated noise from air conditioners through specifying sound level limits measured at the property line. The only municipality that reported the number of enforcement actions instituted against air conditioners in 1973 had this type of regulation.

NOTEWORTHY PROGRAMS

The activities reported by California and Chicago demonstrate the relationship between an active enforcement effort and a successful noise control program.

California had the most comprehensive State noise control program in 1973. Enforcement actions against motor vehicles were instituted by the California Highway Patrol. Based on performance standards and a well-defined measurement methodology, a trained Noise Team conducted monitoring along highways. Citations were issued to operators of vehicles in violation. The activities were concerted and extensive: 232,096 heavy trucks, 8,138 motorcycles, and 656,405 passenger cars and light trucks were tested. Of these, 0.9 percent of the heavy trucks, 13.4 percent of the motorcycles, and 1.5 percent of the passenger cars were found to exceed the noise emission standards specified by the Vehicle Code, and notices of violation were issued to insure compliance.

The established program of Chicago provides an example of active enforcement on the municipal level. The City's comprehensive noise control ordinance was enacted in 1971. Enforcement activities are carried out by teams of trained personnel from the Enforcement Division of the Department of Environmental Control. Performance standards for motor vehicles were enforced through monitoring at selected measurement sites and issuance of citations to violators.

Actions were also instituted against stationary noise sources. Many complaints were received concerning air conditioner noise. Investigations by the Department were made and voluntary compliance with recommendations for abatement sought. If needed, citations or order letters were issued. In all cases, a solution to the reported problem was found.

Complaints play a major role in enforcement in Chicago both in the identification of problems and in increasing the incidence of voluntary compliance. Further, violators of the Chicago ordinance are subject to fines ranging from $5 to $300 for a first offense, and $50 to $500 or six months in the county jail or both for a second or subsequent offense within 180 days. These penalties are strong inducements for voluntary compliance.

Both the City of Chicago and the State of California have instituted successful enforcement programs. This appears to be attributable to a combination of performance standards, defined measurement methodologies and enforcement procedures, trained personnel, appropriate sound measurement and analysis instrumentation, and public awareness that noise regulations were being actively enforced.

ROLE OF EPA

The enforcement aspects of the EPA regulatory activities are discussed in detail in Chapter 4, and the EPA technical assistance efforts relating to enforcement in Chapter 10. These include development of a code of recommended enforcement practices to supplement the model community noise control ordinance as well as determination of measurement methodologies appropriate for State and municipal enforcement activities. In June 1975, a workshop dealing solely with enforcement was held with municipal officials at the National Bureau of Standards in Gaithersburg, Maryland. More workshops of this type may be conducted in the future to provide aid in this vital aspect of noise control.

CHAPTER 10

TECHNICAL ASSISTANCE

One of the major objectives of the survey was to determine the requirements of State and municipal governments to establish and implement noise control programs. A fundamental conclusion drawn from the 1971 survey results was that States and municipalities preferred primary Federal emphasis on the development of noise criteria. This finding was instrumental in determining the EPA position not to advocate the inclusion of a grant provision in the Noise Control Act and in drafting the technical assistance provision of the statute. Passage of the Act not only precipitated an intense interest in noise control but stimulated a heightened level of State and municipal noise control activity.

In view of these developments, the 1974 survey was designed to evaluate how State and municipal noise control needs had changed and whether or not a concensus existed at the State and municipal level as to how Federal funds for noise programs should be applied. Information obtained on State and municipal needs has been used to develop an EPA technical assistance program responsive to identified requirements and to aid in framing EPA noise program priorities. Current EPA assistance activities are discussed in detail in the second section of this chapter.

STATE AND MUNICIPAL NOISE CONTROL NEEDS

The questionnaire instructions included an explanation of the EPA technical assistance role under the Noise Control Act. Based on this understanding, surveyed States and municipalities were requested to identify areas where technical assistance was desired. States and municipalities were also asked to describe major unresolved problems limiting the effectiveness of noise control efforts. Additionally, comments made in covering letters and in responses to other survey questions providing insight into State and municipal requirements. These have been taken into consideration in the analysis of State and municipal noise control needs.

DATA LIMITATIONS AND ANALYTICAL CONSTRAINTS

Open-ended questions were used to allow respondents greater flexibility and latitude in defining their program requirements and problems. Several of the data limitations cited below are attributable to the general nature of the questions.

- Several respondents requested assistance without specifying the types required. This often reflected noise control efforts which had not advanced to the stage where limitations could be evaluated. Without exception, States and municipalities that did not identify definite assistance areas conducted minimal activities or reported no program efforts. These requests for assistance are included in Tables 20, 21, and 22 in the category "unspecified" needs.

- States and municipalities did not rank program problems or assistance requirements in their order of importance. Therefore, priority needs are those identified by the greatest number of respondents.

- The questionnaire referred only to *technical* assistance; no mention of funding was made. Additionally, many State and municipal respondents were aware that EPA had no authority to provide grants for State and municipal noise control programs. Despite this, a substantial number of respondents identified the need for Federal funds. This requirement was therefore greatly underestimated in the survey results.

RESULTS AND DISCUSSION

Thirty-eight States and 146 municipalities responding to the survey identified one or more problem areas or assistance requirements. Table 20 shows the percentage of these 38 States citing each of nine categories of need, as a function of the stage of program development. Table 21 presents similar information for the 146 municipalities identifying noise control requirements. The number of States and municipalities citing each category is indicated in Table 22. This table lists needs by the frequency with which they were reported and includes a breakdown by municipal population size.

The survey results support the following conclusions.

- *A substantial need and desire exists on the part of States and municipalities for a comprehensive and in-depth Federal assistance program.* Eighty-three percent of the States and 80 percent of the municipalities responding to the survey identified one or more requirements for the establishment or operation of noise control programs. Further, a majority of these respondents identified numerous areas where assistance was necessary if their noise control objectives were to be attained. The number of States and municipalities that provided extremely specific lists of their program requirements and problems reflects the extensive consideration and planning that has been given to noise, its effects and control, at the State and municipal level.

  The types of assistance required are directed towards increasing the scope of noise control activities, adoption of quantitative legislation, and the commitment

TABLE 20
STATE NEEDS FOR NOISE CONTROL PROGRAMS

Stage of program development	Number in development category	Number identifying one or more assistance areas	Percent of States listing needs	Percentage of States identifying assistance areas[a]								
				Unspecified[b]	Model legislation	Personnel	Instrumentation	Measurement methodology	Enforcement criteria	Funding	Data Bank	Other[c]
Established	3	3	100	–	33	100	67	67	–	33	–	33
Limited	9	7	78	–	100	57	29	57	29	57	–	–
Minimal	20	17	85	6	76	59	35	53	41	29	12	59
No program effort	14	11	79	45	45	36	27	18	18	27	9	9
Total	46	38	83	16	68	55	34	45	29	34	8	32

[a] Percentages shown are based on the number of States in each development category which identified either noise program problem areas or technical assistance requirements.

[b] Includes those States which required assistance and guidance to develop a noise control program without identifying specific assistance areas.

[c] Includes requests for dissemination of information on Federal noise control regulations and activities, guidance in developing public awareness programs, and consultation and assistance in specific noise program facets.

TABLE 21
MUNICIPAL NEEDS FOR NOISE CONTROL PROGRAMS

Stage of program development	Number in development category	Number identifying one or more assistance areas	Percentage identifying needs or problem areas	Percentage of municipalities identifying assistance areas[a]								
				Unspecified[b]	Model legislation	Personnel	Instrumentation	Measurement methodology	Enforcement criteria	Funding	Data bank	Other[c]
Established	11	11	100	–	55	82	27	45	45	55	27	36
Limited	25	21	84	–	71	81	57	57	48	29	19	33
Minimal activities	92	74	80	22	57	43	39	35	28	27	5	12
No program effort	55	40	73	43	40	33	28	30	23	13	3	5
Total	183	146	80	23	55	49	38	38	31	25	8	15

[a] Percentages shown are based on the number of municipalities in each development category which identified either noise program problem areas or technical assistance requirements.

[b] Includes those municipalities which required assistance and guidance to develop a noise control program without identifying specific assistance areas.

[c] Includes requests for dissemination of information on Federal noise control regulations and activities, guidance in developing public awareness programs, and consultation and assistance in specific noise program facets.

TABLE 22
MUNICIPAL NOISE CONTROL NEEDS BY POPULATION CATEGORY

Noise control needs	Population (in 1,000s)				Total
	75–149	150–240	250–499	500+	
Municipalities in population category	105	29	25	24	183
Identification of one or more areas of need by population	82	22	20	22	146
Rank order of need :					
1. Model legislation	43	10	12	16	81
2. Personnel	33	7	15	16	71
3. Measurement methodology	31	5	9	10	55
4. Instrumentation	30	3	10	12	55
5. Enforcement criteria	23	7	5	10	45
6. Funding	15	4	8	10	37
7. Unspecified[a]	24	6	3	0	33
8. Other[b]	7	4	4	7	22
9. Data bank	7	0	2	3	12

[a] Includes those respondents which required assistance and guidance to develop a noise control program without identifying specific assistance areas.

[b] Includes requests for dissemination of information on Federal noise control regulations and activities, guidance in developing public awareness programs, and consultation and assistance in specific noise program facets.

of sufficient resources for implementation and enforcement. This constitutes a significant shift in emphasis from 1971 requirements. In part, this may be attributable to passage of the Noise Control Act and the associated apportionment of authority and responsibility for noise control among the Federal, State and local government sectors. Secondly, EPA's implementation of the Act has resulted in the development of criteria indicating the effects of noise on the public health and welfare, information on levels of environmental noise, and a methodology for quantifying long term cumulative noise exposure which together provide a basis for regulatory actions.

- *Model legislation was the most frequently cited State and municipal requirement.* This category includes not only development of recommended legislation but requests for technical and legal review of proposed regulations and ordinances. Twenty-six States and 81 municipalities identified inadequate legislative provisions as a factor limiting their noise control efforts or requested assistance in this area. This is consistent with the large number of survey respondents whose program orientation included activities related to the revision or expansion of legislation, as well as the trend towards adoption of performance standards to supplement difficult to enforce nuisance provisions.

  Two areas associated with the implementation and enforcement of noise regulations and ordinances were also identified by a substantial number of respondents. The category of measurement methodology was cited by 17 States and 55 municipalities representing the third greatest area of need. This category includes requests for advice on the development of measurement procedures, general guidelines on how to take valid measurements and conduct noise surveys, guidance on techniques applicable to specific noise sources, and assistance with sound reduction techniques. Eleven States and 45 municipalities identified requirements in the area of enforcement criteria. Guidance was needed on how to (1) establish an effective enforcement program, (2) generate public support for enforcement activities and increase the incidence of voluntary compliance, and (3) determine sound level values appropriate to varying configurations of noise sources and their impact.

- *Inadequate resources frequently limited State and municipal efforts and were identified as major assistance requirements.* The greatest resource need was additional trained personnel required by 55 percent of the States and 49 percent of the municipalities that identified assistance areas. Requests in this category encompassed advice on upgrade training of existing staff, EPA training courses, guidelines for the selection and hiring of personnel, and provision of supplementary personnel on an as needed basis to increase the level of program expertise.

  Sound measurement and analysis instrumentation, needed by 13 States and 55 municipalities, was the fourth most frequently cited requirement. This category includes not only the acquisition of instruments but EPA guidance on the types and proper use of instrumentation appropriate for varying State and municipal noise control activities. Several respondents indicated that lack of sufficient instrumentation limited enforcement activities; others that unavailability of monitoring instruments precluded gathering data on noise sources and problems necessary for the design and development of a noise control program.

Thirteen States and 37 municipalities specifically cited inadequate funds as a factor limiting their noise control efforts or as an area where assistance was necessary. Due to the data limitations mentioned earlier, this significantly underrepresents the extent of State and municipal needs for financial assistance. Further, fulfillment of many of the other identified requirements (e.g., additional personnel, purchase of instrumentation) is based upon the availability of additional monies. For those States and municipalities which had not initiated noise control activities, funding was the major barrier to establishment of a program.

- *The third overall category of need identified by States and municipalities concerned information requirements.* Three States and 12 municipalities desired access to Federal technical and research data relating to noise abatement and control. Other respondents requested that EPA disseminate information on Federal noise control regulations and activities and provide guidance in the development of public education and awareness programs to stimulate citizen support for noise control efforts.

- *There is a relationship between the types of assistance required and the stage of program development.* All of the States and municipalities that had established programs in 1973 requested assistance in one or more areas. These respondents were in a position to critically assess their noise control programs and identify areas where additional efforts were necessary. Personnel was the most frequently cited need by States and municipalities in this development category reflecting program expansion and operation. Municipalities with established programs also attached high priority to model legislation and funding – both of which were requested by 55 percent of the municipalities in this category. State respondents needed additional instrumentation and guidance on measurement methodologies to assist in increased enforcement activities and aid in the ongoing promulgation of regulations to implement comprehensive enabling legislation.

  Seventy-eight percent of the States and 84 percent of the municipalities that had limited programs in 1973 identified one or more requirements. All of the States in this development category needed model legislation, and 57 percent required additional funding, personnel, and assistance in measurement procedures. The most pressing need for municipalities with limited programs was trained personnel although all other need categories were frequently identified. The high proportion requesting assistance and the comprehensiveness of the types of needs identified is consistent with the growth orientation of limited programs. Typically, these States and municipalities have defined their noise control objectives, established the structures and statutory basis for attaining these goals, and were actively moving to implement and administer noise control programs.

Although over 80 percent of the States and municipalities that conducted minimal activities cited problems limiting their efforts or areas where EPA could provide assistance, identified needs were neither as specific nor comprehensive as those reported by States and municipalities with more structured programs. To a greater extent, this was true of States and municipalities which reported no program efforts in 1973. Respondents in these two development categories identified model legislation as their first priority to replace nuisance provisions and to provide the statutory authority to enable development of a noise control program.

- *Identified noise control needs varied with the size of the municipality.* While in all population categories requirements for model legislation and trained personnel ranked first and second, the comprehensiveness and specificity of identified needs were nost pronounced in municipalities with populations greater than 250,000. Requests for funding were proportionately greater in these population groups than among municipalities with fewer inhabitants. All need categories associated with the adoption and implementation of legislation as well as resource allocations were consistently cited by municipalities with populations over 500,000. The unspecified category was mentioned with decreasing frequency as municipal population size increased. These findings reflect the concentration of noise sources in urban centers, the associated extent of population impacted, and the resulting need for noise control measures.

EPA NOISE TECHNICAL ASSISTANCE PROGRAM

This section describes the statutory basis, approach, organization, and current activities of EPA's technical assistance program. It demonstrates the extent to which identified State and municipal requirements for noise control programs are being addressed.

EPA Role

Under the Noise Control Act, State and local governments retain primary responsibility for the control of noise. However, the Act neither imposes specific requirements for States and municipalities to fulfill this responsibility nor does it establish a *comprehensive* Federal assistance role for support of State and municipal programs. Under Section 14(2) of the Act, EPA's authority is limited to the provision of technical assistance to State and local governments to facilitate their development and enforcement of ambient noise standards, including:

- Advice on training of noise control personnel and on selection and operation of noise-abatement equipment; and
- Preparation of model State or local legislation for noise control.

There is no explicit statutory authority for EPA to provide funding to State and municipal governments either for the establishment of noise control programs nor for the maintenance and operation of existing programs.

EPA Technical Assistance Objectives and Approach

In furtherance of this authority, the EPA technical assistance program has three basic objectives:

1. To increase the number of State and local governments establishing effective noise control programs which complement Federal regulatory actions;
2. To increase public knowledge and awareness of the effects of environmental noise on health and welfare and what noise control measures may be initiated; and
3. To implement a national environmental noise monitoring and assessment program to establish baseline data from which to evaluate the impact on public health and welfare and excessive future trends.

To accomplish these objectives and in keeping with limited statutory authority, EPA's assistance efforts have primarily involved the development and dissemination of standardized guidelines, model legislation, and technical information, supplemented by in-depth Regional assistance to State and municipal governments. In addition, considerable effort has been directed to the design and field testing of an environmental noise monitoring system including a standardized measurement methodology.

PROGRAM ORGANIZATION

The Technical Assistance Branch of the Technical Assistance and Operations Division, one of the two major divisions of the EPA Office of Noise Abatement and Control (ONAC), in conjunction with the 10 EPA Regional Offices, is responsible for implementing Section 14(2) of the Noise Control Act. The Regional Offices are the focal point for interaction between EPA and States and municipalities. The States included in each Regional Office's jurisdiction are shown in Figure 13. Each Regional Office has one or more noise representatives, and EPA anticipates that this manpower level will increase in future years. Figure 14 lists the name, address, and telephone number of EPA's Regional noise representatives. To augment Regional noise capabilities, EPA has held noise training courses, provided contractual technical acoustical services to the Regions, and used IPA personnel to supplement its permanent work force. The Intergovernmental Personnel Act (IPA) of 1970 permits the temporary assignment of personnel among the Federal Government and State and local governments and institutions of higher education to perform assignments mutually beneficial to the organizations involved.

TECHNICAL ASSISTANCE ACTIVITIES

The EPA technical assistance program may be divided into five areas: legislation development and implementation; manpower assessment and education; advice on instrumentation and monitoring systems; problem identification and assessment; and information services.

LEGISLATION DEVELOPMENT AND IMPLEMENTATION

EPA, both at the headquarters and regional levels, directly assists State and municipal governments in the technical and legal review of proposed noise legislation. EPA seeks to channel the rapidly growing interest in noise control among States and municipalities into their adoption of quantitative legislation that is *technically sound and legally enforceable.* Efforts include the development of model legislation , supplementary reports and guidelines.

Model Legislation

In cooperation with the Council of State Governments, EPA developed model State enabling legislation for noise control. The model law was published in the Council's 1974 handbook of suggested State legislation, and its provisions have been adopted either in their entirety or in part by several State legislatures.

In September 1975, EPA published a model community noise control ordinance in conjunction with the National Institute of Municipal Law Officers.[1] The model legislation is intended to be a basic tool that communities can use to construct noise control ordinances suited to local needs and conditions. The model ordinance includes both nuisance and performance provisions and covers stationary and mobile noise sources, together with land use planning. The preamble contains an extensive discussion on Federal preemption in addition to other

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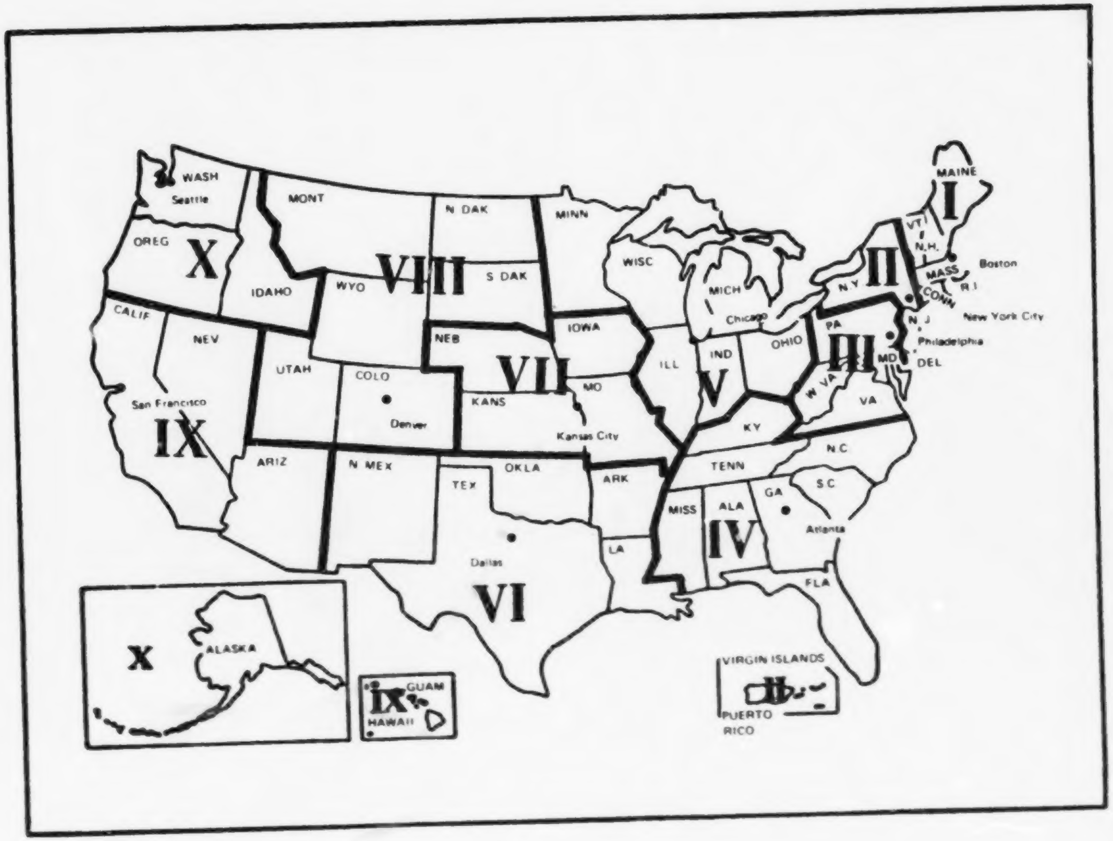
[1] *Model Community Noise Ordinance*, EPA Document 55019-76-003 (September 1975).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OREG
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MONT
WYO
N DAK
S DAK
MINN
WISC
MICH
Chicago
IOWA
NEB
CALIF
NEV
UTAH
COLO
Denver
KANS
MO
Kansas City
ILL
IND
OHIO
PA
N Y
VT
N.H.
MAINE
MASS
Boston
R I
CONN
New York City
N J
Philadelphia
DEL
MD
W VA
VA
KY
San Francisco
ARIZ
N MEX
TEX
Dallas
OKLA
ARK
LA
MISS
ALA
TENN
GA
Atlanta
N C
S C
FLA
ALASKA
GUAM
HAWAII
VIRGIN ISLANDS
PUERTO RICO

Figure 13. U.S. Environmental Protection Agency Regional Offices

EPA REGION	STATES	ADDRESS	NOISE REPRESENTATIVES	TELEPHONE
I	Maine, N.H., Vt., Mass., R.I., Conn.	JFK Building Room 2113 Boston, MA 02203	Mr. Al Hicks	617/223-5708
II	N.Y., N.J., P.R., V.I.	26 Federal Plaza Room 907G New York, NY 10007	Mr. Emilio Escaladas Mr. Tom O'Hare	212/264-2110
III	Pa., Md., Del., W.Va., Va.	Curtis Building Room 225 6th & Walnut Streets Philadelphia, PA 19106	Mr. Patrick Anderson Dr. David Langford	215/597-9118 215/597-8115
IV	N.C., S.C., Tenn., Ky., Miss., Ga., Fla., Alaska	1421 Peachtree St., NE Room 109 Atlanta, GA 30309	Dr. Kent Williams	404/285-3067
V	Wisc., Ill., Mich., Ohio, Ind.	230 S. Dearborn Chicago, ILL 60604	Mr. Horst Witschonke	312/353-7270
VI	N.Mex., Okla., Ark., La., Tex.	1600 Patterson Street Room 1107 Dallas, TEX 75201	Mr. Robert Labreche Mr. Mike Mendias	214/749-7601
VII	Nebr., Kans., Iowa, Mo.	1735 Baltimore Street Kansas City, MO 64108	Mr. Vincent Smith	816/374-3307
VIII	Mont., N.Dak., S.Dak., Wyo., Utah, Colo.	1860 Lincoln Street Suite 900 Denver, CO 80203	Mr. Robert Simmons	303/837-2221
XI	Calif., Nev., Ariz.	100 California Street San Francisco, CA 94111	Dr. Richard Procunier	415/556-4606
X	Wash., Oreg., Idaho	1200 Sixth Avenue Room 11C Seattle, WA 98101	Ms. Deborah Humphrey	206/442-1253

Figure 14. EPA regional noise representatives

explanatory material. EPA is preparing a model code of recommended practices for proper enforcement of the ordinance.

EPA has also completed a literature search and assessment of design criteria in terms of related human response that have been incorporated in building codes throughout the world. This is the first step towards development of a comprehensive model building code including noise specifications with an enforceable methodology.

Reports and Guidelines

To increase the utility of the model ordinance to municipalities, EPA has under development a workbook on community noise abatement and control which is scheduled for publication in the near future. The workbook will contain the model ordinance (perhaps with discussions of a number of alternative provisions) and is planned to include chapters on the legal basis for community action, noise effects on health and welfare, a code of recommended practices, various enforcement approaches, and procedures to establish and maintain a local noise control program.

In February 1975, EPA published an updated edition of "Noise Source Regulation in State and Local Noise Ordinances." This document summarizes the provisions of those State and local regulations stipulating specific performance standards.

MANPOWER ASSESSMENT AND EDUCATION

The primary EPA activity in this area is sponsoring regional noise workshops and seminars for State and municipal officials. Initiated by a 2-day national pilot workshop held in September 1972, in Kansas City, EPA has conducted approximately 30 additional workshops at various locations throughout the country. The educational workshops held during 1972 and 1973 were aimed at stimulating awareness of the noise problem through presentations on health effects, measurement techniques and instrumentation, and the EPA role. Theprogram has now moved into its second phase, that of dissemination of specific data on the formulation and enforcement of noise legislation. Although tailored to the particular audience, these seminars are more technically oriented and typically include laboratory measurement exercises, field trips to monitor specific noise sources, and enforcement techniques.

In July 1975, EPA published guidelines for developing a training program in noise survey techniques. The report is intended to assist States and municipalities in training technicians to make reliable measurements of simple noise problems encountered in the community for ordinance enforcement and complaint investigation. EPA is also working with other Federal agencies to encourage programs (e.g., training projects, application of volunteers) designed to assist States and municipalities in meeting their environmental manpower requirements.

ADVICE ON INSTRUMENTATION AND MONITORING SYSTEMS

EPA responds to requests from State and municipal governments for technical advice on the types and uses of sound measurement and analysis instruments. Through EPA'S Regional Offices, instrumentation is loaned on a limited basis for support of State and municipal monitoring activities. EPA has also undertaken three additional projects in this area.

Monitoring Program

EPA has initiated an extensive noise monitoring effort which has two primary facets – environmental trend monitoring and specific source monitoring. As presently planned, both the trend and source specific monitoring will be carried out at national and local levels. At each level, the environment (geographic location) and personal exposure will be examined through physical noise measurements and social surveys. EPA anticipates that the trend monitoring effort will (1) establish a baseline from which to assess changes in the noise environment, (2) determine the population at risk, (3) establish standard methods and procedures for quality assurance and comparability of data, and (4) provide assistance to States and municipalities in assessing the success of their noise control programs. Source specific monitoring is primarily designed to support the EPA regulatory development process.

A broad measurement methodology for environmental trend monitoring is expected to be completed by June 1976. It should include recommendations on sampling techniques (spatial, temporal), source identification determination, collection of accessory data (e.g., meteorological parameters, traffic flow), instrumentation requirements, and questionnaire development for social surveys. During FY 76 it is estimated that approximately three or four specific sources will also be monitored. The initial emphasis of this program will be on the examination of the environment rather than personal exposure for trend monitoring due to instrumentation limitations. In the future, emphasis may shift to personal dosimetry and automated monitoring techniques.

Measurement of Stationary Noise Sources

EPA has recently conducted a study to determine an accurate statistical/manual sampling technique to be used for the measurement of stationary noise sources. The objective is to recommend measurement methodologies, procedures and instrumentation suitable for enforcement of various types of ordinance provisions. This study will also be used in support of the model code of recommended enforcement practices mentioned earlier.

Design Specifications for Sound Level Meter

This project was intended to stimulate the availability of low cost instrumentation. The design concept and construction specifications were developed by the Air Force Academy under an Interagency Agreement with EPA.

PROBLEM IDENTIFICATION AND ASSESSMENT

In addition to providing in-depth technical assistance to various State and municipal governments, EPA conducts three other activities in this area.

Study of Interior Noise Levels for Transportation Systems

To determine the extent to which noise environments of enclosed transportation systems represent a risk to passenger health, an analysis was made of information collected by past transportation studies as well as new data gathered for this project. The analysis consisted of identifying trends among various transportation modes, noting areas of data deficiency, calculating the effect of noise exposure on health under various assumptions of travel duration and workplace noise exposure levels, and assessing measurement methodologies. EPA anticipates that the recently published study results[1] will assist State and municipal agencies in setting noise specifications for the purchase of transportation equipment. Data developed in this study will be one element in assessing the impact of community noise on individuals over a 24-hour period. In addition, the study has led to two future projects. The first is using personal dosimetry techniques to determine if noise exposure values may be inferred from sound level readings. The second is the development of a methodology to measure the interior noise levels of aircraft.

Noise Surveys of Selected Sites

To test measurement procedures and instrumentation and to gather data on environmental noise levels for use by State or local agencies, EPA has participated in various noise surveys. One such survey was the assessment of environmental noise levels in the Waco, Texas metropolitan area to assist local planners.

Assessment of State and Municipal Noise Control Programs

EPA is designing a survey directed to all 50 States, incorporated municipalities with populations greater than 10,000, and approximately 500 counties. The results of the 1974 survey will be used as a baseline from which to assess progress in all spheres of environmental noise control. The survey, which will be conducted in the spring of 1976, should provide data both for EPA's technical assistance program and regulatory activities.

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[1] *Passenger Noise Environments of Enclosed Transportation Systems*, EPA Document 550/9-75-025 (June 1975).

INFORMATION SERVICES

EPA has established a library of technical information, which has been given an important assist through the introduction of a computerized information retrieval system containing abstracted noise data and articles. This data bank, with terminals at headquarters and regional offices, is used in part to reply to State and municipal information requirements. Inputs to the data management system, based on EPA program priorities, include information on specific noise sources, control technology, and other abatement techniques available or under development, measurement methodologies, and noise laws and regulations. Copies of EPA reports and documents may be obtained from the regional offices. An audio-visual library is being developed where material will be available for loan to State and municipal governments for training purposes.

As EPA regulations are promulgated, enforcement and regulatory guidance will be provided to States and municipalities. For example, EPA developed a Cooperative Noise Reduction Program which was designed to encourage early and voluntary compliance with the Interstate Motor Carrier Noise Regulation which became effective October 15, 1975.

Within the constraints imposed by existing legislative authority and limited resources, EPA's noise technical assistance program is presently addressing each area of State and municipal needs identified in the survey with the exception of funding. This omission is particularly acute in view of the current economic situation as States and municipalities are hard-pressed to maintain existing services let alone initiate new programs. Further the recent completion of the community model noise ordinance will, in itself, stimulate additional municipal resource requirements for its adoption and implementation.

APPENDIX A

This appendix contains the cover letter, explanatory instructions, and survey questionnaire distributed to 50 States, four territories, the District of Columbia, and 235 municipalities to obtain information on their environmental noise control activities.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
LOGO
WASHINGTON, D.C. 20460

Dear

The Environmental Protection Agency's Office of Noise Abatement and Control is undertaking a survey of the non-occupational noise control activities of all State governments and some selected local governments. (By "non-occupational" noise control activities, EPA means those activities that are not directly concerned with the Occupational Safety and Health Act, i.e., OSHA programs.) Your State or municipality, whichever the case may be, has been selected by EPA to be included in this survey.

Please complete the enclosed questionnaire and return *within 30 days of the date of this letter* to:

It is important that this questionnaire be completed and returned promptly since EPA plans to use the results of this survey as a guide for developing a State and local government technical assistance program.

If you have any questions regarding this survey, please contact the EPA regional noise office representative whose name appears above.

Your cooperation and assistance in this matter are sincerely appreciated.

Sincerely yours,

Alvin F. Meyer, Jr.
Deputy Assistant Administrator
for Noise Control Programs
Office of Noise Abatement and Control

THIS SPACE IS FOR THE USE OF THE EPA REGIONAL OFFICE ADMINISTERING THE QUESTIONNAIRE

Region #__________

Program: (Check One)

[ ] State

[ ] Municipal

Category #__________

Name of State or Municipality:

____

STATE AND MUNICIPAL NONOCCUPATIONAL NOISE PROGRAM QUESTIONNAIRE

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF NOISE ABATEMENT AND CONTROL
WASHINGTON, D.C. 20460

Space has been provided on this questionnaire for answering each question. You may use this space if you wish or you may answer on a separate answer sheet. If you have some or all of the information that is being sought already tabulated, you may simply enclose a copy of this tabulated data with the questionnaire when you return it.

Please feel free to elaborate upon any particular aspect of your noise program that you feel deserves attention. Also, please enclose a copy of your noise ordinance, law, or statute, your noise program enabling legislation, your noise program enforcement manual, and any other material that would help to describe your noise program more fully.

Instructions for completing each question of the questionnaire are provided on the following page. Please read the instructions before attempting to complete the questions to insure that you provide the proper information.

INSTRUCTIONS FOR COMPLETING THE STATE AND MUNICIPAL NONOCCUPATIONAL NOISE PROGRAM QUESTIONNAIRE

I. NOISE PROGRAM

A. Organizational unit responsible for program.

Indicate the title of the organizational unit responsible for the program (e.g., Office of Environmental Quality, Department of Public Health, etc.).

B. Name, title, address, and telephone number of official directing the noise program.

Self explanatory.

C. Orientation of program effort.

Indicate what the program is designed for (e.g., survey/monitoring, ordinance development, public education, etc.). Enclose the mission statement of the program if available, otherwise, elaborate as much as possible.

II. ENFORCEMENT EFFORT

A. Organizational unit responsible for enforcement actions.

Indicate the title of the organizational unit that is responsible for enforcing your noise ordinance, law, or statute (e.g., State or City police, Department of Public Health, etc.). If the same unit that administers the program enforces the program, answer, "Same as I.A."

B. Enforcement actions instituted in 1973.

Indicate the number of citations, warrants, cease and desist orders, etc., issued in 1973, the number of these citations that resulted in fines, and the number of these warrants that resulted in prosecution, etc.

C. Enforcement problem areas.

Which classes of noise sources (motor vehicles, aircraft, construction equipment, etc.) are most often in violation of your noise ordinance, law, or statute and account for the majority of your enforcement actions.

III. BUDGETARY DATA

Please provide a functional breakdown of your budgetary data for 1973, and projected budgetary data for 1974 and 1975. You may use a format other than the one provided if you feel that it would be more descriptive.

IV. PERSONNEL

Under Job title, list the present (1973) and projected future (1974 and 1975) job titles of the personnel in your noise program. Under *Personnel level,* indicate the present (1973) and projected future (1974 and 1975) number of individuals to which each job title is assigned. Each of the three vertical columns under *Personnel level* should add up to the total present or total projected future number of personnel in the noise program.

V. EQUIPMENT

Under *Equipment,* list by manufacturer, model number, and function, the noise measurement and analysis equipment that you have now (1973) and that which you intend to acquire in the future (1974 and 1975).

Under *Quantity,* indicate the number of pieces of each piece of equipment that you have now (1973) and that which you intend to acquire in the future (1974 and 1975).

VI. PROGRAM PROBLEMS

Self explanatory.

VII. APPLICATION OF TECHNICAL ASSISTANCE

The Noise Control Act of 1972 directs the Administrator of the Environmental Protection Agency to "provide technical assistance to State and local governments to facilitate their development and enforcement of ambient noise standards." This technical assistance is to include, but is not to be limited to, advice on training of noise-control personnel, advice on selection and operation of noise-abatement equipment, and preparation of model State and local legislation for noise control. List those areas of your program where you desire assistance.

Form Approved
O.M.B. 158-R-0099

STATE AND MUNICIPAL NONOCCUPATIONAL NOISE PROGRAM QUESTIONNAIRE

I. NOISE PROGRAM

A. Organizational unit responsible for program.

B. Name, title, address, and telephone number of official directing the Noise program.

C. Orientation of program effort.

Form Approved
O.M.B. 158-R-0099

II. ENFORCEMENT EFFORT

A. Organizational unit responsible for enforcement actions.

B. Enforcement actions instituted in 1973.

C. Enforcement problem areas.

Form Approved
O.M.B. 158-R-0099

III. BUDGETARY DATA

Budget data for 1973, and projected budget data for 1974 and 1975.

	Supervisory	Engineering	Technical	Enforcement	Legal	Clerical
1973 Man hours						
1973 Cost						
1974 Man hours						
1974 Cost						
1975 Man hours						
1975 Cost						

Form Approved
O.M.B. 158-R-0099

IV. PERSONNEL

	Personnel level		
	1973	1974	1975
Job Title			
Totals:			

V. EQUIPMENT

	Quantity		
	1973	1974	1975
Equipment			

Form Approved
O.M.B. 158-R-0099

VI. PROGRAM PROBLEMS

Major unresolved problem areas of your noise program.

VII. APPLICATION OF TECHNICAL ASSISTANCE

Areas where EPA could provide assistance to your noise program.

APPENDIX B

This appendix provides a list of the designated contact, title, and address of each agency involved in noise activities as reported by State and municipal survey respondents.

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STATE AND MUNICIPAL ENVIRONMENTAL NOISE CONTROL OFFICIALS: NAMES, ADDRESSES, TELEPHONE NUMBERS

(Compiled for all States and all municipalities with populations of 75,000 or more.)

**********ALABAMA

L. G. Linn, Jr. PHONE: 205/832-5847
Department of Public Health
Environmental Health Administration Lab
State Office Building
Montgomery, Alabama 36104

------HUNTSVILLE

Charles H. Younger PHONE: 205/539-9612
City Attorney
P. O. Box 308
Huntsville, Alabama 35804

------MONTGOMERY

J. Aronstein, Jr., Director PHONE: 205/262-4421
Department of Planning & Development
P. O. Box 1111
Montgomery, Alabama 36102

**********ARIZONA

John H. Beck, Director
Division of Sanitation
Arizona State Department of Health
1740 E. Adams
Phoenix, Arizona 85007

------PHOENIX

Norman Y. Cravens
Deputy City Manager
251 N. Washington
Phoenix, Arizona 85003

Mr. L. Bethel
Building and Housing Safety Department
Zoning Enforcement
Phoenix, Arizona 85003

Lt. Diming
Inspector Services Bureau
Police Department
Phoenix, Arizona

------TUCSON

James A. Betts PHONE: 602/791-4371
Assistant Director of Transportation
P. O. Box 5547
Tucson, Arizona 85703

**********CALIFORNIA

A. E. Lowe, Chief PHONE: 415/843-7900
Office of Noise Control
State Department of Health
2151 Berkeley Way
Berkeley, California 94704

Lt. J. D. De Luca PHONE: 916/445-6345
California Highway Patrol Field Program
2611 – 26th Street
Sacramento, California 95818

Comm. Warren M. Heath PHONE: 916/445-1865
California Highway Patrol
New Vehicles Program
2611 – 26th Street
Sacramento, California 95818

W. R. Green PHONE: 916/445-4400
Design and Engineering
California Department of Transportation
1120 N.Street
Sacramento, California 95814

J. L. Beaton PHONE: 916/445-4712
Technical and Research
California Department of Transportation
5900 Folsom Blvd.
Sacramento, California 95819

Richard G. Dyer PHONE: 916/445-2582
Airport Environmental Specialist
Sacramento Airport
Sacramento, California 95834

Gregory Harding PHONE: 916/445-1114
Local Assistance Officer
Council of Inter-Governmental Relations
1400 – 10th Street
Sacramento, California 95814

-----ANAHEIM

Robert J. Kelley, Assistant Planner PHONE: 714/533-5711
Development Services Department
P. O. Box 3222
Anaheim, California 92803

-----BURBANK

William J. Watterson PHONE: 213/846-2141
Building Department Supt.
275 E. Olive Avenue
Burbank, California 91502

-----DOWNEY

Ervin Spindel PHONE: 213/861-0361
Director, Department of Community Development
City Hall
8425 Second Street
Downey, California 90241

-----FREMONT

Don Driggs, City Manager PHONE: 415/796-3438
City Government Building
Fremont, California 94538

------FRESNO

George A. Kerber PHONE: 209/266-8031
Director of Planning & Inspection
2326 Fresno Street
Fresno, California 93721

------FULLERTON

William F. Cornett PHONE: 714/525-7171
City Administrator
303 W. Commonwealth Avenue
Fullerton, California 92632

------GARDEN GROVE

Doug La Belle PHONE: 714/638-6851
Development Agency Director
11391 Acacia Parkway
Garden Grove, California 90240

------HAYWARD

Bruce P. Allred, Planning Director PHONE: 415/581-2345
City of Hayward
22300 Foothill Blvd.
Hayward, California 94541

------INGLEWOOD

P. Patrick Mann PHONE: 213/674-7111
Environmental Standards Supervisor
City of Inglewood
1 Manchester Blvd.
Inglewood, California 90301

------LAKEWOOD

Charles Chivetta, Director PHONE: 213/866-9771
Community Development Department
City of Lakewood
P. O. Box 158
Lakewood, California 90714

------ LOS ANGELES

Jack Green, General Manager
Department of Environmental Quality
Room 550
City Hall East
Los Angeles, California 90012

Albert W. Optician, Noise Pollution Specialist
Head of Acoustics Division
Department of Environmental Quality
Room 550, City Hall East
Los Angeles, California 90012

R. J. Williams
Superintendent of Building
Room 411, City Hall
Los Angeles, California 90012

------ OAKLAND

Cecil Riley, City Manager — PHONE: 415/273-3301
City Hall
Oakland, California 94612

------ ORANGE

John Lane, Administrator — PHONE: 714/532-0466
Advanced Planning
300 E. Chapman Avenue
Orange, California 92666

John R. Philp, M.D. — PHONE: 714/834-3131
Health Officer
Orange County Health Department
645 North Ross Street
Santa Ana, California 92702

------ PASADENA

Murray Cooper — PHONE: 213/577-4390
Environmental Health Director
City Hall
100 N. Garfield
Pasadena, California 91109

-----POMONA

Jerrold R. Gonce
City Administrator
City Hall
Pomona, California 91769

-----RIVERSIDE

Merle G. Gardner PHONE: 714/787-7371
Planning Director
City Hall
Riverside, California 92501

------SACRAMENTO

R. H. Parker
City Engineer
Room 207, City Hall
Sacramento, California 95814

------SAN BERNARDINO

Salvatore F. Catalano, Secretary
Environmental Review Committee
300 North D Street
San Bernardino, California 92418

-----SAN DIEGO

James E. Dukes PHONE: 714/236-6088
Noise Abatement and Control Administrator
Environmental Quality Department
City Administration Building,
202 C Street
San Diego, California 92101

-----SAN JOSE

Eldon A. Erickson PHONE: 408/277-4000
Environmental Coordinator
801 North First Street
San Jose, California 95110

------SAN MATEO

Jack Watt, Building Official PHONE: 415/574-6750
Housing Advisory and Appeal Board
330 W. 20th Avenue
San Mateo, California 94403

------SANTA CLARA

Santa Clara Police Department

------SANTA MONICA

Clyde V. Fitzgerald PHONE: 213/397-0980
Airport Director
Santa Monica Municipal Airport
Santa Monica, California

------STOCKTON

Elder Gunter, City Manager PHONE: 209/944-8212
City Hall
Stockton, California 95202

------TORRANCE

Glen K. Godfrey PHONE: 213/328-5310
Supervisor, Environmental Quality Division
3031 Torrance Boulevard
Torrance, California 90503

**********COLORADO

Harold J. Weber, Principal Audiologist
Noise Pollution Control Officer
4210 E. 11th Avenue
Denver, Colorado 80220

------AURORA

John Arney, Director PHONE: 303/341-7500
Department of Planning
& Community Development
1470 Emporia Street
Aurora, Colorado 80010

-----COLORADO SPRINGS

Thomas A. Martin
PHONE: 303/471-6610
Noise Abatement Officer
Safety Department
P. O. Box 1575
Colorado Springs, Colorado 80902

-----DENVER

Thomas I. Peabody, P. E.
PHONE: 303/893-6241
Chief, Public Health Engineering Department
Department of Health & Hospitals, Unit 4
W 6th Avenue & Cherokee
Denver, Colorado 80204

-----LAKEWOOD

Donald Y. Shanfelt
PHONE: 303/232-2209
Environmental Control Officer
Department of Community Development
1580 Yarrow Street
Lakewood, Colorado 80215

**********CONNECTICUT

Warren Thurnauer
PHONE: 203/566-2390
Motor Vehicle Safety Coordinator
Connecticut State Motor Vehicle Department
60 State Street
Wethersfield, Connecticut 06109

Robert Gabala
PHONE: 203/566-5360
Environmental Section
Connecticut State Department of Transportation
24 Wolcott Hill Road
Wethersfield, Connecticut 06109

Paul Norton, Air Pollution Control Engineer
PHONE: 203/566-2690
Connecticut Street, Department of
Environmental Protection
Air Compliance Unit
165 Capital Avenue
Hartford, Connecticut 06115

------BRIDGEPORT

Joseph R. Tedesco, Air Pollution Inspector
Bridgeport Air Pollution Department
Department of Humane Affairs
835 Washington Avenue
Bridgeport, Connecticut 06604

------HARTFORD

H. A. Bourne, Director
Environmental Health
Health Department
550 Main Street
Hartford, Connecticut 06103

------NEW HAVEN

Orlando Silvestri, Director
PHONE: 203/562-0151
Building Department
Hall of Records, Room 502
200 Orange Street
New Haven, Connecticut 06510

------NORWALK

Francis J. Kalaman, M.D.
PHONE: 203/838-7531
M.P.H. Director
137–139 East Avenue
Norwalk, Connecticut 06851

**********FLORIDA

Jesse O. Borthwick
PHONE: 904/488-1345
Noise Control Program Manager
Department of Environmental Regulations
2562 Executive Center Circle, East
Tallahassee, Florida 32301

------FORT LAUDERDALE

William Bennett
PHONE: 305/527-2121
Chief Code Compliance Officer
City of Fort Lauderdale
P. O. Drawer 1181
Fort Lauderdale, Florida 33302

------HIALIAH

Hialiah Police Department
Hialiah, Florida 33011

------HOLLYWOOD

Hollywood City Commission
Hollywood, Florida 33020

------JACKSONVILLE

Walter W. Honour PHONE: 904/633-3479
Division Chief
Bio-Environmental Services Division
515 West Sixth Street
Jacksonville, Florida 32206

------MIAMI

R. E. Ferencik, Director PHONE: 305/445-4711
Building Department
Box No. 708
Miami, Florida 33101

------ORLANDO

James Fowler PHONE: 305/849-2129
Assistant City Attorney
City of Orlando
400 South Orange Avenue
Orlando, Florida 32801

------ST. PETERSBURG

Emil D. Hicks, Jr. PHONE: 813/894-2111
Director, Department of Pollution Control
P. O. Box 2842
St. Petersburg, Florida 33731

------TAMPA

Robert M. Jones, Director, Noise Programs PHONE: 813/223-1311
Hillsborough County Environmental
Protection Commission
Stovall Professional Building
305 N. Morgan Street, Sixth Floor
Tampa, Florida 33602

**********GEORGIA

Charles A. Head, III PHONE: 404/656-4871
Chief, Special Operations Unit
Georgia Department of Human Resources
47 Trinity Avenue, S.W.
Atlanta, Georgia 30334

------ATLANTA

W. A. Hewes, Assistant Building Official
Office of Inspector of Buildings
800 City Hall
Atlanta, Georgia 30303

------COLUMBUS

Curtiss E. McClung PHONE: 404/324-0211
Chief of Police
P. O. Box 1340
Columbus, Georgia 31902

------MACON

John Wilbanks PHONE: 912/746-9656
Macon–Bibb County Planning & Zoning Commission
P. O. Box 247, Room 305
City Hall
Macon, Georgia 31202

------SAVANNAH

Arthur A. Mensonsa PHONE: 912/233-9321
City Manager
City of Savannah
P. O. Box 1027
Savannah, Georgia 31402

**********HAWAII

Sadamoto Iwashita PHONE: 808/548-3075
Chief, Noise & Radiation Branch
State Department of Health
P. O. Box 3378
Honolulu, Hawaii 96801

-----HONOLULU

Herbert Muraoka PHONE: 808/546-7651
City and County of Honolulu
Building Department
Honolulu Hale, Honolulu, Hawaii 96813

**********IDAHO

Vaughn Anderson PHONE: 208/384-2390
Director–Categorical Programs
Department Environmental and Community
Services, Statehouse
Boise, Idaho 83720

------BOISE

James L. Morris, City Engineer PHONE: 208/342-4621
Department of Public Works
City Hall
P. O. Box 500
Boise, Idaho 83701

**********ILLINOIS

John S. Moore PHONE: 217/786-6758
Manager, Division of Noise Pollution Control
Environmental Protection Agency
2200 Churchill Road
Springfield, Illinois 62706

-----CHICAGO

H. W. Poston, Commissioner PHONE: 312/744-4080
Department of Environmental Control
320 N. Clark Street, Room 402
Chicago, Illinois 60610

-----JOLIET

Joliet Police Department
Joliet, Illinois 60431

----- ROCKFORD

Frank Osinski PHONE: 815/987-2575
City–County Health Department
Winnebego County Courthouse
Rockford, Illinois 61101

**********INDIANA

Ralph C. Pickard PHONE: 317/633-4420
Indiana State Board of Health
Environmental Management Board
1330 West Michigan Street
Indianapolis, Indiana 46206

------EVANSVILLE

Jesse C. Crooks, Director PHONE: 812/426-5595
Environmental Protection Agency
Room 207, Administration Building
Civic Center Complex
Evansville, Indiana 47708

------FORT WAYNE

Dr. Oliver Kaiser
Board of Public Health
Fort Wayne, Indiana 46802

------GARY

Joel Johnson, Director PHONE: 219/944-6795
Gary Health Department
3600 W. 3rd Avenue
Gary, Indiana 46406

------HAMMOND

Ronald L. Novak, Chief
Hammond Air Pollution Control
5925 Calumet Avenue
Hammond, Indiana 46320

------INDIANAPOLIS

Harold J. Egenes PHONE: 317/633-3198
Director, Department of Metropolitan Development
1860 City–County Building
Indianapolis, Indiana 46204

------SOUTH BEND

Capt. James R. Sweitzer PHONE: 219/284-9306
South Bend Police Department
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